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THE EFFECT OF FREIGHT RATES ON AGRICULTURAL GEOGRAPHY.[1]

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If one needs proof of the dependence of agriculture upon transportation facilities, it may be had in abundance from the story of the movement of the American people into the West. Almost from the first the primary question was that of transportation facilities, even of transportation possibilities.

The early settlers beyond the Alleghanies depended on the rivers as a means of travel into the country, and likewise for getting produce back to a market. Before the days of the steamboat, transportation was mainly downstream, and with good reason it was predicted that New Orleans was destined to be the greatest port on the Atlantic coast. The geography of the early agriculture of the whole country is outlined by the water courses.

By the middle of the nineteenth century, when the lure of cheap land had coaxed the settlers well into the heart of the Mississippi Valley, the question of transportation was second only to the Homestead law in the minds of the pioneer. Wheat was hauled a hundred miles to Dubuque, Winona, and Milwaukee, not because it was valuable enough to stand such expensive transportation, but merely because it was the only marketable commodity which the farmer had, and because there was no other means of finding a buyer. When this work of transporting was done by the grower of the produce there was a high cost, but no charge.

[1] Paper read at the annual meeting of the American Farm Economic Association, Pittsburgh, Pa., Dec. 29, 1921.

No sooner was there a demand for goods farther west than agricultural production and manufacturing had progressed than the dependence of man on transportation was more acutely manifest than had appeared in connection with the goods pioneers had undertaken to sell. This was possible because prices paid by the pioneer miner, for instance, were well above prices paid by the eastern consumers, who, as a rule, were well supplied.

Before the days of the railroad there were numerous instances of freight hauling at the rate of a hundred dollars a ton for distances less than half across the continent. For instance, it cost $10 a barrel to carry flour up the Missouri from Kansas or Iowa points to Ft. Benton, Montana. These rates acted as a strong stimulus to the beginnings of agriculture in Montana, during a decade or two after the rush to California. The cost of getting foodstuff into the territory was so high as to make farming and gardening more profitable than washing gold. The same situation now obtains in portions of Alaska. Lack of adequate transportation facilities is forcing agriculture well up to the arctic circle.

The appreciation of the dependence of man on the means of moving goods was manifest long ago. It is the great leveler of economic conditions. In Adam Smith's "Wealth of Nations" we find these words:

> Good roads, canals and navagable rivers, by diminishing the expense of carriage, put the remote parts of the country more nearly upon a level with those in the neighborhood of the town. They are upon that account the greatest of all improvements. They encourage the cultivation of the remote, which must always be the most extensive circle of the country. They are advantageous to the town, by breaking down the monopoly of the country in its neighborhood. They are advantageous even to that part of the country. Though they introduce some rival commodities into the old market, they open many new markets to its produce. Monopoly, besides, is a great enemy to good management, which can never be universally established, but in consequence of the free and universal competition which forces everybody to have recourse to it for the sake of self-defence. It is not more than fifty years ago, that some of the counties in the neighborhood of London petitioned the parliament against the extension of the turn-pike roads into the remoter counties. Those remoter counties, they pretended, from the cheapness of labor, would be able to sell their grass and corn cheaper in the London Market than themselves, and would thereby reduce their rents, and ruin their cultivation. Their rents, however, have risen, and their cultivation has been improved since that time.

Among the most striking of modern developments are those designed to eliminate, so far as possible, both time and space as hin-

drances to human activity. Man likes to move, as is manifested by the attention given to motor-driven vehicles. The cost in money is in no small measure compensated by the saving in time. Better and cheaper transportation is a universal want. An increase in freight rates out of proportion to other prices, no matter how necessary it may be, strikes a blow at the vitals of the body politic. This does not apply to a nominal increase, corresponding to the increases in general price levels. It applies to an increase such as has developed during the past year and a half, and which is out of harmony with the price level, becoming, in fact, the cause of unbalanced prices. The occasion for the increase in freight rates is not difficult to discover. Even the persistency of the high level in the face of a general fall in prices admits of explanation, and to some extent defense. Nevertheless agriculture is thrown out of gear by the lack of balance between the sale value of farm produce and the cost of moving it. Either the rates must be revised downward or agriculture must be readjusted to the new demands.

Does the Farmer Pay the Freight?

In nearly all popular discussions of freight rates and the farmers it is assumed that the farmer pays the freight both ways. It is manifest that he actually does pay it in the case of goods shipped to him as a consumer, and likewise that he suffers a loss corresponding to the freight charge in the case of farm products shipped by him to distant buyers. If the assumption that the farmer pays the freight both ways be true, then, indeed, no one but the farmer is vitally concerned in the haulage charge from country to city and back. Explicitly it is claimed that the price of wheat is the central market price minus the cost of getting it from farm to central market, and likewise the farm price of such things as machinery is popularly computed as the wholesale figure plus subsequent additions of which freight is an item. In part these views are correct, but in part only. They are correct in so far as they apply to individual, isolated cases, and to all cases in which adjustments consequent upon the new rates have not yet been made. For instance, a given farmer, or a small group of farmers, living beyond the main settlements may very properly figure their receipts for grain produced in terms of central market prices minus the cost of getting it delivered to such market. Should it at one time cost them 50 cents a bushel for transportation, and later through better means cost but a quarter, the farmers will be benefited to the full extent of the quarter dollar. On the other

hand, should the transportation charge increase by 25 cents, the farmers will have exactly 25 cents less for each bushel.

Likewise, should it cost $40 in freight charges to carry a self-binder to this outlying district in place of $20 to points nearer the manufacturing center, the pioneer farmers are poorer because of this additional charge. Whether they have off-setting advantages in other ways does not enter into the question. It is made to appear that the farmer pays the freight both to and from the farm. The case is as presented on the assumption that the isolated farmers are so few as to exert no appreciable effect on the market in the way of goods demanded and supplied. They take the same price which would prevail were they to cease production, and they pay the same price which would prevail were they to cease buying.

The above point of view is held perhaps unconsciously by the farmers in general as applying to the present high freight situation. Ultimately the view must be wrong. Immediately it may be mainly true. For example, suppose there is an ample supply of wheat in sight, as was the case in 1920, and the next crop virtually assured, since habit is strong, and no conspicuous advantage offered in changing to other lines. Thus the succeeding wheat supply is bound to be overabundant. With a surplus to be sold in Europe the first question to be asked is what can be obtained for the amount put on sale in that market. Undoubtedly this price is pivotal in the determination of prices in this country. Thus for the present, and by the present we may understand a period of time a few years in length, it is not incorrect to say that the farmer pays the freight on the produce he raises. The supply is determined in advance, for the time being, and freight costs do not enter as a supply determinant any more than the high wages paid in 1920, when it was assumed that prices would remain high, availed in keeping prices high. That the farmer thinks he pays the freight on goods both going and coming can not be doubted. Under certain circumstances he does, but the circumstances bringing this to pass are not normal. As an illustration an actual occurrence may be cited. A South Dakota farmer sold some alfalfa hay to a Wisconsin dairyman. The price in South Dakota was $8 a ton, which left the farmer but $4 a ton for the hay as it stood in the stack. The railroad charge was $13 a ton, thus making $21 at the point of delivery. The Dakota farmer thinks of the $21 and feels that he gets just as much less as the amount of the charge made for hauling from his station to the Wisconsin station. The buyer looks at the $8 price f. o. b. shipping station and feels that he is obliged to

pay the difference. How both can be right requires explanation. Each is taking it for granted that the two prices are respectively fixed independently of the transportation facilities and the charge for the service. Nothing could be farther from the truth. Were there no facilities for making the shipment, hay might be worth $10 more per ton than it is in Wisconsin, and might be worth nothing in South Dakota. Indeed, it might not be grown at all in the latter State, or at least not for shipment to distant points. In this case the Wisconsin dairyman would look for his hay nearer home and would buy it or not, according to the chances it afforded of yielding him a profit. But whatever the price paid it is clear that from his standpoint he must pay for getting it from the point of origin to his premises.

Taking a long-time point of view, it is demonstrable that the buyer rather than the seller pays the freight, even though Jones may advertise to do so. The generally accepted principle that the benefits of improvements tend to diffuse themselves is nowhere better illustrated than in the historical instance of the development of the American railway. In 1870 the western farmer was ready to mortgage his farm in order to subscribe bonuses for the railroad. Lower freight rates, he believed, stood between him and prosperity. He got the lower rates, but so also did his neighbors, and by producing more than was wanted at the former prices sales were made at such low levels as to leave but a meager margin for the living of the farmer and his family. The advantage was diffused and society got cheap food, while the producer was left with a meager reward.

Should freight rates continue high the resultant decrease in the supplies of goods due to the discontinuance of operations on the part of those least favorably situated would result in a decreased supply. By this means a higher price would of necessity obtain. Thus in the higher price the consumer would pay the freight, while the producer would immediately be, after the readjustment, about as well off as before. Actually he would be worse off because of the necessity of living a more restricted life. Goods would cost him more, and while he would seem relatively to be prosperous, it would not be on the same level as though transportation had remained cheap.

The Nation has been Built upon Cheap Transportation.

With the cheapest railway service in the world the United States has to an unbelievable extent become a single economic unit. Senator Benton declared, about the time of the Oregon settlement, that God himself had set the Rocky Mountains as the western terminus of

American expansion. Yet we cover our houses with red-cedar shingles from Oregon and Washington, and they in those States use International Harvester machines and burn Standard oil.

Before the days of cheap transportation small packing plants were to be found throughout the Ohio and Mississippi valleys; agricultural implements were manufactured in a hundred scattered cities; iron was mined in a half-dozen important districts; wheat was milled within short distances of where it was grown. To an even greater extent each community depended on itself for potatoes, fruits, and vegetables. In other words, the family and the community were largely self-sufficing.

For a generation now well past we have turned the scattered units of America into an organism. We do our gardening near the cities or in the regions of long summers. We get our bread from Kansas and North Dakota; butter from Minnesota, Iowa, and Wisconsin; meat from the corn belt and the Southwest. Likewise we do the packing in a few great centers and redistribute the meat. Iron comes from Minnesota and goes to every State in the Union, even to those once great producers of iron. More than half of the agricultural implements are made in two States, and these furnish almost no raw material used in the process.

Strictly within the field of agriculture it may be noted that for many years the eastern dairyman have fed their cows on hay and mill feeds from the Middle West. Cattle feeders have brought their cattle from Texas and Oklahoma to the corn fields of Kansas and Nebraska, while western lambs have been fattened within a hundred miles of Chicago. We have in a large way illustrated the principle so aptly discussed by Von Thünen. The United States is not as simple as his hypothetical state. The circles are not so nearly concentric, but in the main they are there. We have carried territorial division of labor to a high degree of development. In general, the producer of raw material has gone to the outermost circle, the manufacturer has gravitated toward the center. Agriculture has spread itself as far as the cost of transportation would permit.

High Rates Disorganize the Economic System.

Imagine that we should wake up some morning to find that the earth had expanded in circumference to twice her former size, with no greater ability to support life. San Francisco would be over 6,000 miles from New York. Omaha a thousand miles from Chicago. The eastern dairyman twice as far from his feed supplies, and, *pari*

passu, the grower of feed, double the distance from his market. At once there would begin a readjustment of life on the planet. Those who in a business way had been neighbors would become strangers, and those who had depended on the bewildering variety of the market for suggestions with respect to viands and apparel would begin to cultivate their own gardens and consult their local craftsman. With distances doubled it is not to be doubted that local producers would have the advantage, so far as goods wanted near home are concerned, over producers far away. Likewise the inducement to produce for a distant market would be lessened. In other words, the situation would favor producing for the home market, which is to say, each community would be impelled to the extent of the added cost of getting goods from one section to another to live apart from and independent of others. Such traffic as would persist would be of necessity in goods high in value per pound. For instance, there is butter shipped out of the Dakotas. This would probably increase, since the cost of shipping butter is relatively small per dollar of value. Similarly the cost of shipping live stock is less in proportion to value than is the case of wheat. Indeed, it has already been announced by the governor of one of the Northwestern States that in his opinion the farmers of his section, on account of the increased freight rates, will be obliged to produce goods of a more concentrated nature than wheat and flax.

The farmers near to the centers of population will be affected much less than those at a distance so far as selling is concerned. This is true because on account of nearness to market the freight charge represents a smaller item in the whole expense of getting goods to market than is the case with those farther out. Hence it is safe to predict that, should the present rates continue, the Pennsylvania and New York farmers will have an added advantage over the western farmers in the matter of marketing such produce as they grow on their own farms. As buyers of feed to be turned into dairy products and meat they will be less advantageously situated than formerly. Hence it may be expected that there will be a strong tendency to produce more roughage east of the Alleghanies, and at the same time a probability of bringing in liquid milk from farther to the west. The advantage of territorial division of labor is likely to suffer a distinct set-back. Ultimately the railroads will have less to haul, and the people will have less advantage growing out of the hauling. If a larger share must go to the railroad work, then again must the time of greatest economy in production be postponed. We must return to

a more primitive mode of life. More energy will go into overcoming friction, and high freight charges may well be likened to a high-resistance coil which brings the electric current down to lower voltage. In the transmission of the electric current the voltage is reduced for a purpose, even though some loss result. In high freight rates the two great classes of people, farmers on the one hand and consumers on the other, suffer, and civilization is hindered in its march.

The following table shows important facts concerning the freight charges of 1921 in contrast with those of 1914:

FREIGHT RATES.

Shipping Point From	Receiving Point To	Article.	Freight Rates Per 100 lbs.			Value F.O.B. Shipping Point Per 100 lbs.			Percentage of Freight Rate to F.O.B. Value.		
			1914.	1921.	Index 1914.	1914.	1921.	Index 1914.	1914.	1921.	Increase.
Wis. Rapids	Chicago	Butter	33	56	169	28.40	73.00	151	1.2%	1.3%	0.1%
" "	"	Cheese	33	56	169	14.00	20.00	143	2.4%	2.5%	0.4%
" "	"	B. Cattle	17.7	29½	166	6.01	7.00	117	2.9%	4.2%	1.3%
Chicago	Wis. Rapids	Farm. Mach.	18	34	188	.70	1.00	143	26 %	34 %	8 %
Bismark	" "	Hay	33	56	169	.55½	.60	108	60 %	93 %	33 %
Bozeman	" "	Hay	50	86½	172	.55½	.60	108	90 %	144 %	54 %
Bismark	" "	Bran	26	42	161	.87	.79	91	30 %	53 %	23 %
Bozeman	" "	Bran	37½	63	170	.87	.79	91	42 %	80 %	38 %
Bismark	Chicago	Wheat	26	42	161	1.47	1.45	99	18 %	29 %	11 %
Bozeman	"	Wheat	37½	63	170	1.47	1.45	99	25 %	43 %	18 %
Bismark	"	Hay	35	59½	168	.55½	.60	108	64 %	99 %	35 %
Bozeman	"	Hay	52	86½	166	.55½	.60	108	94 %	144 %	50 %
Bismark	"	Bran	26	42	161	.87	.79	91	30 %	53 %	23 %
Bozeman	"	Bran	37½	63	170	.87	.79	91	42 %	80 %	38 %
Bismark	"	B. Cattle	41	69	168	6.01	7.00	117	6.8%	9.9%	3.1%
Bozeman	"	B. Cattle	41½	70½	169	6.01	7.00	117	6.9%	10 %	3.1%
Chicago	Bismark	Farm. Mach.	65	110	169	.70	1.00	143	93 %	110 %	17 %
Chicago	"	Cheese	107	181	169	14.00	20.00	143	7.6%	9 %	1.4%

THE FARMER AND THE RAILWAYS.*

HONORABLE SYDNEY ANDERSON.

It is rather a difficult matter within the limits of a brief talk to develop a sound consideration of a field which involves some fifty billion dollars in capital for transportation in all its forms and an annual expenditure for operation and maintenance which approximates ten billion dollars.

Certainly no industry is more vitally concerned with transportation efficiently performed at reasonable rates than farming. The farmer produced in 1921 14.7 per cent of all tonnage originated on the steam railroads of the United States, 29.1 per cent in the western district and in the southern district about 19.5 per cent. A considerable proportion of the farm products of the country as a whole are perishable and require for transportation special equipment, expedited services, and privileges of diversion. Another very large proportion of farm products are semi-perishable and also require a very high-grade equipment, equipment which must be in first-class order, and certain special privileges and services. Besides this, agricultural products are sold very largely upon exchanges in fluctuating markets and the lack of facilities, services, or congestion which delays service, frequently involves a considerable loss to the farmer. In addition, much of the farm products move by water. Farm products are produced in surplus quantities and sold abroad in all of the seven seas. The farmer is therefore as much interested in the merchant marine and its development as any industry in this country. His disadvantages from dependence upon foreign merchant marines are so obvious as to need no demonstration. On the other hand, the development of an American merchant marine frankly conducted in aid of American foreign commerce presents very great advantages.

I want, if I can, in the beginning to develop what seems to me to be a picture of the problem from the standpoint of agricultural production. The Mississippi Valley divides the United States into practically two economic worlds. The section west of the Mississippi River contains 69 per cent of the area of the United States. It has 47 per cent of the railroad mileage. It produces 54 per cent of the six principal grain crops and about 60 per cent of the cattle produced in the United States. It has only 27 per cent of the population and

* Read before the District of Columbia Farm Economic Association.

produces only 29 per cent of the total tonnage originated. In other words, 47 per cent of the railroad mileage of the United States is supported in 69 per cent of the area by 27 per cent of the population and by 29 per cent of the originated tonnage. At the other end of the problem in the part of the country east of the Mississippi River and north of the Ohio River, including Pennsylvania, Maryland, and the New England States, an area of 12½ per cent of the United States, we have 70 per cent of the value of the manufactures produced in the United States, 47 per cent of the population, and 48 per cent of the tonnage originated. The problem, therefore, is not only a problem of transportation, but in a broader sense it is a problem of the distribution of population. If one third of the population in the northeastern area which I have described could be transported by some magic west of the Mississippi River, a very large proportion of the railroad problem of the country would promptly disappear.

There are some evidences that this transition of population from east to west is approaching, but it is obvious that no magic can transfer the population of New England and the Eastern States west of the Mississippi River, and, therefore, if we can not adjust the population of the country to transportation, we must of necessity adjust transportation to population. Speaking generally (perhaps this will be disputed by railroad people), I think it is sufficiently demonstrated that the price which the farmer receives represents the terminal price less transportation and handling charges, and these transportation and handling charges from the farmer's point of view are therefore a part of his cost of production.

Several studies have been made on the effect of distance from the market upon farm prices, but I shall not take the time to go into them at length. Among other studies that were made by the commission was one covering 9,476 cars of fruits and vegetables coming from various parts of the United States into eastern markets, including Chicago. This study took in all of the business of the firms in the commodities which were covered. The average haul on these groups was approximately 1,400 miles. The study was primarily made with the object of determining the relationship between freight cost and the price received by the original distributing receiver, but it also shows the effect upon the net price to the farmer of distance from the market. These figures show that the relationship of the freight cost to price received at the distributing terminal varies very widely even upon the same commodity. For example, the average freight upon 2,022 cars of barreled apples, produced principally in New

York, was 12 per cent of the price, whereas in the case of boxed apples, produced principally in Washington, the freight represented 36.23 per cent of the price received at the distributing terminal. This indicates, I think, very clearly, the disadvantage arising from distance from consuming markets.

If we take cabbage, we find that in the case of northern cabbage freight was 40.9 per cent of the price, in the case of southern cabbage 66 per cent, in the case of California cabbage 70 per cent, and in the case of Texas cabbage 75 per cent, again illustrating the disadvantage of the farmer in terms of freight costs who is at a long distance from the consuming market.

The farmer is not only interested in a reasonable rate, but he is interested also in a reasonable relationship between the rates upon different commodities. He can better afford, for example, to pay a high rate upon shoes than he can upon oats, upon clothes than upon wheat, or upon farm implements than upon live stock. The freight rate upon consumer's goods is paid but once, while the freight rate upon basic commodities, in which class agricultural products clearly fall, is frequently multiplied in the course of the manufacture and distribution of the product. As an example of what I mean, for instance, common lumber which costs $12 per thousand at the mill in Oregon will take a freight rate into the consuming sections of the United States of approximately $24 a car per thousand, so that if the retailer takes a margin or mark-up of 30 per cent it would represent a mark-up of $3.60 on the lumber and $7.20 on the freight.

I hope that we can have a better recognition of the economic effect of rates upon the distribution of commodities and a more discriminating application of rates as between commodities of high value and commodities of low value. Such relationships can not be maintained on the basis of horizontal increases or decreases in rates. Now, the value of commodities, I think this gathering of economists will very promptly recognize, is not always accurately expressed in terms of money. It is better expressed in terms of exchange—that is, in terms of the purchasing power of commodities in other commodities or in services. I have worked out a series of indexes which are intended to show the relationship of the prices of farm commodities to the price of transportation. From 1910 to 1916, inclusive, this relationship remained practically unchanged, but in 1916 the prices of farm products began to rise, while the price of transportation rose later and in much smaller degrees. As a result, compared with 1913, the farmer's dollar in commodities in 1916 would buy $1.24 worth of

transportation, and in 1919 $1.63 worth of transportation. From 1916 to 1920 transportation was the cheapest thing the farmer could buy. In January, 1920, the purchasing power of farm commodities in terms of freight rates may be expressed by the figure $1.76. By April, 1921, the purchasing power of farm products in terms of transportation had dropped to 63 cents and by November had risen again to 72 cents. The purchasing power of prime steers in January, 1919, in terms of transportation, was $1.78, and in June, 1921, 59 cents; hogs in January, 1919, $1.68, and in June, 1921, 59 cents; and corn in January, 1919, $1.69, and in June, 1921, 57 cents; and wheat in January, 1919, $1.70, and in June, 1921, $1.05. All of these figures are based on relationships of 1913. In other words, in terms of transportation the wheat farmer has been relatively better off than the farmer who raised either cattle, hogs, or corn.

Now, the question is, What is the answer? I think there are several answers, all of them more or less inter-related and dependent upon each other. The first answer, I think, is a consolidation of the railway systems of the country so as to permit the tonnage in territories having a greater traffic density to bear a larger proportion of the total cost of transportation as compared with the sections of the country having a lesser traffic density. As I pointed out in the picture which I tried very briefly to draw, you have the Mississippi Valley separating two distinct economic worlds, one of them agricultural in character, the other essentially industrial in character, and your problem is to move the agricultural commodities from this area west of the Mississippi River to the consuming centers in the northeastern country at a rate which will permit the farmer to survive and to make something like a decent profit. At strategic points in the Mississippi Valley there are established great packing plants at which the cattle and hogs coming from the West are concentrated, processed, and sent on to the great consuming areas; here our great mills are located; here are the great grain terminals; here, again, the railroads divide into the railroads running east and the railroads running west. Without consolidation of these railroads, which will consolidate the East and the West into one economic world instead of into two, it is quite impossible to establish a basis of rates under which western agriculture can reach eastern markets at a profit equivalent to that which is ordinarily considered necessary for other industries.

The second answer it seems to me to be a more discriminating application of rates on the basis of the recognition in addition to the factors now considered in rate making—first, of the general economic

conditions and price levels existing in the country; second, of the price relations existing between different commodities; and, third, of the effect of rates upon the economic distribution of commodities. The cost of wages and material tends to rise with the prices of commodities, and if railroad rates do not rise in periods of rising prices, rising wages, and rising costs of material, the railroads will starve. On the other hand, if rates do not come down in periods of declining prices, the commerce of the country is partially strangled and the rates act as a drag upon the resumption of normal business activity. Now, it may be said that rates can not rise and fall with every fluctuation in prices and I am not suggesting anything of that kind. I do say that on the basis of a sufficient estimation of the economic facts it should have been possible, and it certainly would have been wise, to have raised rates in 1916 instead of in 1918, and to have lowered rates in 1920 instead of in 1921. In other words, rate changes should anticipate somewhat the economic conditions which are likely to exist in the future. If it is possible to make freight rates in general correspond with price levels, then it becomes possible for the railroads in times of prosperity to earn a reserve which will enable them in times of business depression and consequent low prices to participate in deflation with the rest of the country by rate reductions. Our complaint is not so much that rates are high, but that rates are high when prices of agricultural commodities are low.

There are three great regulators or controllers of the business activity of the country. These are taxes, interest rates, and freight rates. Taxes tend to absorb capital in non-productive enterprises which would otherwise be invested in productive enterprises, and to that extent to limit the increased development of the country which arises from the investment of capital in productive enterprises. In much the same way interest rates tend to regulate the volume of credit and money, and consequently to accelerate or retard the velocity of business as the rates are high or low. In much the same way freight rates tend to accelerate or retard the volume of business and to increase or decrease the radius of distribution of commodities. In periods of rising prices such as we had from 1916 to 1920 the average length of haul on the railroads tends to increase faster than the normal rate. For example, from 1911 to 1916, during which prices were practically stationary, the average haul increased 18 miles, or an average of 3 miles a year. From 1916 to 1920, when prices rose rapidly—more rapidly than freight rates—the average haul increased 42 miles, or 8.4 miles on the average for a year, whereas in 1920

during the period of business depression the average haul increased slightly less than two miles.

The one point I am trying to make here is that low freight rates in times of rising prices tend to do exactly the same thing that cheap money does—they tend to accelerate the rising prices and to force an uneconomic distribution of commodities. On the other hand, high rates in periods of low prices act as a drag upon business and tend to retard the normal business recovery of the country.

Freight rates can anticipate and currently correspond to general price levels and economic conditions as well as interest rates or discount rates anticipate and currently correspond to the volume of business and credit.

The fourth answer, it seems to me, lies in the working out of a more flexible and simple rate structure. If I correctly understand the rate structure of the country, it substantially contemplates a different rate from every point in the United States to every other point in the United States and frequently a number of different rates between two points in the United States. It is not so long since very much the same situation existed in the case of express rates, and it was protested very loudly that it was practically impossible to reduce those rates to a formula which the average human being could understand, and yet very promptly upon the passage of the parcels post act it became possible to reduce express rates to a relatively understandable formula.

Now, I appreciate the fact that simplification of the rate structure of the country is a task which involves an enormous amount of research and would probably take years, but I am firmly of the opinion that it is utterly impossible to establish transportation in this country on a basis which will adequately serve the commerce and industry of the country unless we can move conservatively and carefully in the direction of a more flexible and a more simple rate structure.

Transportation is essentially a public function, it creates no wealth in and of itself, although it tends to develop wealth. It is an aid to the development of the country and to commerce and the economic distribution of commodities. It ought to function as an aid to commerce rather than on the basis of carrying as much tonnage as possible as far as possible.

I am not nearly so much impressed with what we know about transportation and its relation to the economics of the country, and the relation of the various forms of transportation to each other, as I am with what we do not know. I think the first impression the man who investigates the transportation system gets is that while

there is a vast amount of information in regard to the operation of the railroads, the cost of railroads, and the physical valuation of railroads, there is very little information in regard to the economic relationship of transportation to the business, industry and agriculture of the country. We have in this country about 50 billion dollars invested in transportation—$18,900,000,000 book value of steam roads alone. About four and one half billion dollars a year is spent in operating and maintaining the steam railways of the country. We have about two and one half billion invested in highways; about eight billion in automobiles; five billion in electric railways; some billions in canals, rivers, and harbors; more than two and a half billion in government shipping alone. Yet we have in this country no agency which is thinking in terms of the transportation of the country as a whole.

There has recently been made (and in referring to this matter I am doing so at the instance of Mr. Robinson, who was to have been here this afternoon, but who was obliged to go to New York) a proposal for the creation of a National Transportation Institute to promote fundamental research and education in transportation economics. It is contemplated that this institute will be supported by private contributions from the railroads of the country, and in a broader sense the shippers, industry, and agriculture; that its policies and determinations will be controlled by a board of governors composed of men eminent in their various fields and sufficiently disinterested to make their conclusions acceptable to the public as a whole. The purpose of such an institute would be primarily to study fundamental problems relating to the correlation of the transportation systems, the study of such questions as the terminal problem, which everybody talks glibly about, but which nobody knows what it is. Such problems, for instance, as the relationship between express and the parcel post and freight transportation. Such an institute would serve a very high purpose, would be an aid in the education of those who are engaged in transportation or in regulatory work, as well as the general public. We have hopes that this institute will be realized and in its realization we hope for the good wishes at least of all those who are interested in the economic relationship of transportation to agriculture, industry, and commerce.

FARM PRICES AND RAILWAY RATES.

JULIUS H. PARMELEE,

DIRECTOR OF THE BUREAU OF RAILWAY ECONOMICS, WASHINGTON, D. C.[1]

In a period of deflation like the present it is frequently remarked that prices are too high, that wages are too high, and that freight rates are too high. On hearing such a remark I usually drop into slang and inquire: "What do you mean too high? Too high for what?" Discussion usually develops the fact that the average man, when he says that prices, wages, or rates are too high, has no clear idea of the meaning of the phrase. He really means that prices, wages, and rates are higher than they were—that is, higher than he had become accustomed to. When his attention is called to the fact that if all three factors have increased in the same ratio and have retained their relationship one to the other no one can complain, he recognizes that what he meant by the phrase "too high" referred not to the particular level itself, but to its relationship with other levels.

We have all doubtless been guilty of this same confusion of ideas. We grumble because this, that, or the other thing is too high in price, whether it be an article we purchase, or labor for which we pay, or transportation service which we utilize. The fundamental question underlying any attempt to ascertain whether prices are out of line is not: Are they too high in themselves? but, Are they relatively higher than other prices? In other words, the problem is to ascertain whether relationships have changed, or whether the several economic factors are still in balance. If the balance has changed during a given period, it becomes necessary to inquire in what direction the change has taken place, and whether the balance was adjusted with sufficient nicety at the beginning of the period.

Who can say whether economic conditions are ever in a state of proper balance or adjustment? The whole complex of our economic structure is constantly changing with reference to its component parts, and never is a delicately adjusted balance long maintained. Prices are constantly rising or falling, wages are going up or down, the cost of transportation is never stationary. If wages go up as prices fall, then real wages, measured by the purchasing power of money wages, are rising. If wages rise as prices go up, then real wages are rising or falling according as the rate of increase in money wages is greater

[1] Read before the District of Columbia Farm Economic Association.

or less than that of prices. The converse is true when both wages and prices are falling. It may be stated, without great fear of contradiction, that the trend of prices and wages is never the same. The rates of increase or decrease never exactly correspond, or may even be in opposite directions. I will go further and assert that there is no way of determining whether prices, wages, and freight rates are at any time in a state of exact equilibrium. At most, it can only be said that in the long run the price of a commodity must be sufficient to cover its total cost of production, including wages, transportation, and other costs, together with a margin of profit for the producer. In other words, the trend of prices must in a general way parallel, even when it follows, the trend of production costs.

The same is true of freight rates. If prices go up while rates remain stationary, then the freight rate is relatively lower than formerly. If the opposite, it follows that freight rates have risen. This is true even though the freight rate in terms of money may not have changed at all. There is an added complication here, in that legislation exists to regulate rates, which frequently retards the normal tendency of rates to follow prices up or down.

Let us apply these generalizations to a particular problem, namely, the relationship between freight rates and farm prices during the past few years. Taking the average freight charge in 1913 as 100 and the average wholesale price of farm products as 100, we find that in 1918 the index number for freight charges had risen to 118, whereas for farm products it had gone as high as 220. In 1919 the freight-rate index was 135 and the farm-product index 234. During this year, 1919, there was a gap of almost 100 points between freight charges and the price of farm products. In 1920 the freight-rate index rose to 146, while farm products dropped to 218. In 1921 the freight-rate index rose still further to 177, whereas the farm-product index took a decided drop to 120. During the first four months of 1922 the index numbers were 167 and 124, respectively. Thus it appears that compared with the year 1913 the wholesale prices of farm products have increased 24 per cent, whereas the average freight charge has increased 67 per cent. There is now a difference of 43 points in favor of farm products, instead of a margin in favor of freight charges as formerly. But who can say that the average freight rate in 1913 was properly adjusted to the average price of farm products, or for that matter to the average price of any group of commodities? It may be that freight rates were too low in 1913—that is, that the cost of transportation was out of line with the general

price level—or it may be that general prices were too high, that they were out of line with rates.

However this may be, there is no question that the rapid deflation in farm prices since 1920 has made them relatively lower than freight rates. The margin has become so great as to create an insistent demand for rate reduction. This demand has been partially met both by voluntary action of the carriers themselves and by decisions on the part of the Interstate Commerce Commission. The result is that the freight-rate level from July 1 will be about 11 per cent lower than it was on August 26, 1920, when the increased rates authorized by the commission in that year went into effect. Freight rates on farm products have declined somewhat more than 11 per cent, probably 12 to 13 per cent on the average. This will somewhat reduce the present margin of 43 points between freight rates and farm prices.

The problem which has confronted the railways and the Interstate Commerce Commission during recent months has been to reduce the average charge for transportation in such a way as to assist the process of general deflation, yet avoid cutting off the profits which the railways have a reasonable expectation of earning. In 1921 the railways earned 3¼ per cent on the tentative value of their properties as fixed by the Interstate Commerce Commission. During the 21 months since increased rates went into effect their average annual rate has been only 3⅓ per cent. In considering this problem the commission had the choice of two alternatives, either to make drastic reductions in the rates on the basic commodities underlying our manufacturing and mercantile operations or to make moderate reductions applicable uniformly to all commodities. Both alternatives have been utilized. In the western grain, grain products, and hay case the commission authorized reductions in rates on those commodities running from 10 to 22 per cent. This was done with the stated intention of assisting agricultural interests in western territory. The commission has similarly made reductions of 20 per cent in live stock rates, and has reduced rates on lumber and other products, all with a view to the needs of the respective industries.

Utilizing the other alternative as well, the commission recently made a 10 per cent horizontal reduction on all commodities, so far as the rates had not yet been reduced. Where rates had been reduced less than 10 per cent, they are to be further reduced to a point 10 per cent below the 1920 level. Rates already reduced more than 10 per cent below 1920 are not affected. The net result is that rates on all commodities, beginning July 1, will be at least 10 per cent below their

1920 level, while some commodities will be on a rate basis from 10 to 33⅓ per cent lower. The bulk of the reductions greater than 10 per cent are to be found in the field of agricultural products.

This problem goes to the heart of our general economic readjustment. When the cost of transportation has increased in line with other costs and prices, and when those other costs and prices begin to fall, shall the cost of transportation be reduced in the same way as it went up, namely, by a series of horizontal changes uniformly made, or shall the wind be tempered to the shorn lamb by making the reductions greatest where the needs seem to be the greatest? It may be assumed, I think, that in the long run either process will bring rates to the same general level—that is, whether rates are reduced by a selective process or by a series of horizontal reductions, they will gradually seek a level of readjustment that will approximate the readjustment in general price levels. The problem is a difficult one. Briefly stated, it is whether the adjustment of transportation rates should or should not correspond to the adjustment in other costs of production. Viewed as a general economic problem, my answer would be yes, namely, that deflation goes on at a different rate in different industries, and that the deflation in transportation costs should follow the same tendency. But there are qualifying considerations.

In the first place, it may be that farm prices have been deflated because of other reasons than the high freight-rate level. If this is the case, then it might reasonably be argued that any further reductions in freight rates should be applied to other industries than agriculture, so as to stimulate deflation in those industries, thereby bringing a helpful reaction on the whole situation.

In the second place, not only does a selective process of rate reduction affect different industries differently, but it tends to affect different railway companies differently. There are railways, for example, 85 per cent of whose freight traffic consists of coal. A drastic reduction in coal rates might ruin such a company, although it might have slight effect on a company with only a 5 per cent coal traffic. On the other hand, a railway company whose freight traffic is diversified might prefer a drastic reduction in coal rates to a moderate reduction in all freight rates. This delicate situation must be considered in any determination as to the best method of rate reduction.

In the third place, and perhaps most important of all, the farmer is a consumer as well as producer, and it is to his interest that prices

be reduced on all products of which he is a purchaser and consumer. That a general reduction in freight rates should therefore benefit him as a consumer is clear, even though such a general reduction is at the expense of a greater reduction in rates on the products he sells. What he loses in one aspect he should gain in the other. Let me develop this point for a moment. The American farmer is one of our largest domestic consumers. He buys only when he can sell, and it is therefore a matter of general concern that he shall become able to sell his products promptly at a fair price. But if the price he gets for his product is low, while the prices of the goods he buys are high, he is forced to contract his purchases. This affects the general market and prevents an active resumption of business, which in turn reacts on the farmer himself, for his products can not be marketed in a time of depression. While it is true, therefore, that the farmer can buy only if he can sell, it is also true that he can sell only if he can buy. He can buy only when prices in general come down to the level of his farm prices. If a general cut in freight rates assists price deflation in the manufacturing industry, then it benefits the farmer as surely, although not so directly, as a rate reduction on his own products. So I say that the general rate reduction effective July 1 will benefit the farmer as certainly as it will benefit the rest of the producing and consuming public. Again, the margin between the original producer and the final consumer of all articles has increased since 1913. Not only have money prices advanced in general through currency inflation, not yet entirely corrected, but the advent of heavy income and corporation taxes all along the line has widened the space between raw material and finished product prices. This factor will not disappear until our war debt is liquidated. The greater share of total income demanded by labor, which can not and should not be entirely denied, adds to intermediate production and distribution costs. For these reasons it is practically hopeless for the farmer, or the producer of any raw material, to expect as favorable a relation between the prices of what he sells and what he buys as existed before the war. Among other things, he can not expect the relatives of farm prices and of freight rates to again reach the same level, unless some revolutionary method of conducting rail transportation is introduced. His best remedy, it seems to me, is to institute more and more efficiency of farming so as to increase productivity. A greater average production, year by year, will compensate the smaller relative price for farm products that is ahead of him.

The final point to bear in mind is that whereas the Interstate Commerce Commission can not ignore the economic situation in any in-

dustry, it must also consider the revenue needs of the carriers. In growing degree since 1910, and particularly since the passage of the Transportation Act in 1920, the measure by which to determine equitable rate levels has come to be the amount of railway net income deemed necessary. Yet the commission must consider other economic factors as well, for they only can supply the basis of a sound forecast of future traffic and earnings. Will a given rate reduction so stimulate traffic as to offset the loss in net income from the reduction? Or will a reduction of some other rate, or a different percentage of reduction, be more likely both to stimulate business and to preserve railway net income?

The commission's most recent decision was in line with a horizontal policy of reductions. It predicated this decision on an increase in freight traffic of 10 per cent. Thus far in 1922 railway freight traffic has run about 5 per cent ahead of 1921, although with the settlement of the coal strike the ratio of increase may become greater.

These are economic questions, my brief allusion to which will, I trust, induce you to give them thoughtful consideration. Readjustment of freight rates is one factor in the general economic readjustment and must be carried on with due regard to the needs of the carriers, the needs of the agricultural industry, and of all other industries as well. The cost of transportation is one of the costs of production and distribution. Like other costs, it must be met, whether low or high, just as wages must be paid, whether high or low. But the transportation cost must be paid, for otherwise our transportation machine would break down, and without adequate transportation no economic organization can long survive.

NATIONAL TRANSPORTATION INSTITUTE.

BIRD M. ROBINSON,

WASHINGTON, D. C.

The proposition to establish a National Transportation Institute in Washington has been most favorably received and the movement has gained very great momentum.

The Joint Commission of Agricultural Inquiry of the United States Congress, after a very extended inquiry, recommended the establishment of such an institute, and Honorable Sydney Anderson, chairman of that commission, is now actively aiding in the work necessary to accomplish that result.

That proposition has been approved by many of the agricultural, industrial, and commercial organizations, and has been endorsed by many of the leading Senators, who are members of the Interstate Commerce Committee of the Senate, and Members of the House of Representatives, who are members of the Interstate and Foreign Commerce Committee of that body. President Harding has endorsed the institute in a letter to Mr. Anderson as follows:

"* * * I was much impressed with your statement of the purposes of such an organization, and am convinced that it would be of great practical usefulness. The broad and understanding study of the entire transportation problem is unquestionably a serious national, indeed, I think I may well say, a serious world necessity at this time. Such an organization as you are proposing ought to become a power in connection with the Nation-wide consideration of these problems, and a useful directing force in connection with the determination of public policy."

The object of the institute can be summarized as follows:

To aid the people of the United States in obtaining and maintaining the most efficient transportation facilities and service in the world.

To aid in educating the people with reference to their transportation problems, so that public sentiment will forbid forcing upon the Government the enormous cost of acquiring existing facilities and providing necessary additional ones, and the great burden of furnishing transportation.

To aid in educating the people with respect to the actual facts about their transportation facilities and service, and the just compensation that should be paid to all parties for such services rendered.

The plan of procedure will be to first conduct necessary research so as to ascertain the true fundamental principles of the various kinds of our transportation facilities;

The facts as to the present condition and the relative importance of each class of common carrier;

The effect of present laws and regulations, and

How, and to what extent, the public and the carriers will be benefited, or adversely affected, by any attitude or action that may be taken in respect to their transportation problems.

After necessary research, the institute will proceed with its educational plans. It will first employ a number of persons, probably one for each State in the Union, men of the highest intelligence and integrity, and will give them an intensive course of training with reference to transportation in all of its aspects. These special representatives will thereafter be located in their respective States as the field representative of the institute. They will be charged with the duty of appearing before public assemblies of any character and discuss the transportation problem in its various aspects. . . . They will furnish to newspapers and other publications full and reliable information with reference to transportation questions and will arouse interest among persons who may become students in the institute itself.

Regular courses of training on the transportation subject, following the procedure of leading universities, will be given to students.

All questions affecting the public, including the adoption of the fundamental principles of transportation, the facts with reference to the present condition of each class of carrier and the effect of existing laws and regulations, and the effect of proposed action will be within the exclusive jurisdiction of a Board of Governors consisting of some of the most preëminent men in the country who are not interested in transportation; and Hon. Edward E. Clark, formerly chairman of the Interstate Commerce Commission, will be chairman of that board.

Every effort is being made to enlist the active coöperation and participation of all of the fundamental agricultural and business interests, as well as that of the various kinds of transportation agencies, so that all phases of the transportation question may be properly presented to and considered by the Board of Governors.

The organizers of the institute state that it will have the support of a large number of the leading men of the country; that it will receive the support of most of the leading agricultural, industrial, commercial, and transportation organizations and interests, and that it will become a real source of impartial information about all phases of transportation.

THE RELATION OF FARM MANAGEMENT AND MARKETING TO ECONOMICS.

G. F. WARREN.

With the growing interest in farm management, marketing, and other subjects of a similar nature, the organization of these subjects is attracting attention. The history of the development of other fields is of interest.

In the beginning, civil engineering was often taught by a professor of mathematics, and electrical engineering by a professor of physics. Other persons entered these fields who were primarily engineers rather than mathematicians or physicists. As the development proceeded these subjects have come to stand alone, using mathematics, chemistry, physics, botany, and any other subjects that would be of service in the development of the science of engineering.

Similarly agronomy, horticulture, and forestry were sometimes included under the terms agricultural botany, forest botany, and the like. At the same time, persons entered these fields who were not primarily botanists. Later each of these subjects came to stand alone and began to have, not the point of view of botany, but the point of view of crop production. Botany, chemistry, mathematics, and a great variety of other subjects were called on and used as tools in the development of the new sciences.

At one time agricultural chemistry included discussions of milk tests, spray materials, fertilizers, feeds, and the like. As new fields of study developed agricultural chemistry ceased to be a well-defined subject. The name will doubtless disappear. This does not mean less chemistry. It means much more chemistry, not merely in chemistry departments, but also means that chemistry is pervading almost every field and is used in many subjects the point of view of which is not primarily chemical, such as soils, plant breeding, pomology, dairy industry, animal nutrition, and the like. No one of these subjects can progress far without chemistry, but neither can any of them go far if limited to chemistry.

Some institutions now have departments of home economics. Had the same work begun a generation ago, it is likely that it would have been called home chemistry. It can not be limited to either chemistry or economics if it is to progress as it should.

No applied subject can be confined to the limits of any one ele-

mental science. In fact, progress in a so-called fundamental science is largely dependent on the use of other sciences. In the beginning, men usually enter the applied field from different elemental subjects and often attempt to limit the new subject to that one field. Other men enter from more general fields and are likely to minimize the importance of the underlying science that is most used. Chemists who became professors of soils tended to minimize the geological, meteorological, bacteriological, and economic aspects of the subject. Others who were not well trained in chemistry tended to minimize the value of chemistry. Not until the subject came to stand alone, using whatever science would be of service, was the greatest progress made.

Medicine is not zoölogy, although it deals with zoölogical specimens. If it were called human zoölogy, its development would be greatly limited. It is an independent subject with a new aim—not the aim of zoölogy. It should be free to use every science and art to help in its development.

Judging by the illustrations given above, it seems logical that in time the term agricultural economics will disappear. This will not mean less economics. It means that farm management, marketing, and similar subjects will use economics, mathematics, and other subjects in the development of the work.

At present the work is being given under various names in different institutions. The name often influences the character of the work given. Whatever the names used, the relative importance of various phases of work should be kept in mind. For those who desire to farm a knowledge of farm management is needed, just as a knowledge of soils is necessary, and as a knowledge of the principles of feeding is necessary for those who plan to raise live stock. In the judgment of the writer a good understanding of the principles of farm management also is necessary before one is ready to discuss public problems of agricultural economics. Similarly a fundamental study of the processes of marketing is needed by those who are to go into marketing work, and is a necessary prerequisite for those who are interested in improvements in the methods of distribution as a public question.

In all this work the writer believes that the agricultural colleges should follow the method of botany, chemistry, and physics in laboratory study of cases. A thorough study of one plant cell should precede any generalization about plant cells. So thorough study of one farm business should precede generalization about farming. Generalizations may later be made, rather than spend time on abstract principles when no single case is thoroughly understood in all its details.

AN ERRONEOUS METHOD OF CALCULATING DEPRECIATION.

G. F. WARREN.

In reporting income tax the approved method of estimating depreciation is to divide the cost by the probable number of years of use. Some textbooks of accounting also give this erroneous method. If depreciation is correctly estimated, it will be much greater in the early years than in the later years of use. Depreciation decreases as the machine gets older. Repairs increase with use. The sum of the two is a decreasing amount. An illustration from farm machinery is typical.

If a farmer pays $200 for a grain binder that he expects to use 10 years, he does not expect it to be worth $180 at the end of the year. If he wished to dispose of it, he would consider it to be a good sale if he got $160. At the end of five years he is likely to carry it on the inventory at perhaps $75. During the last few years of use comparatively little change is made in the inventory value. In the meantime cost of repairs will be increasing, but the sum of the two will be much less in later years than in the first years. The machine will usually be discarded when the combined sum of depreciation and repairs is less than the depreciation on a new machine. It will be discarded because of the risk of having it break at a critical time rather than because repairs and depreciation are so high. If the farmer has a very small amount of work to be done, so that he can lose perhaps one half of the available days in harvest and still get his work done, he will continue to use a machine that is very old. Frequently such a farmer buys second-hand tools from his neighbors who are operating larger businesses. He then secures the advantage of a very low combined cost of depreciation and repairs without too great a risk from breakage.

A somewhat similar adjustment occurs with automobiles. Persons who have their repair work done at a garage often find the repairs on an old machine greater than repairs and depreciation on a new one. They, therefore, trade in the old machine and get a new one. The high value of a second-hand auto that makes this possible is because so many of them pass into the hands of persons who reduce repair costs by doing the work themselves. A second-hand machine may be worth considerable to such a party when it has no value for one who hires all repairs made.

So far as I am aware, there is no case in which the depreciation the first year should be as little as cost divided by probable years of use. For farm machinery, the first year's depreciation should ordinarily be at least double the figure thus obtained. For new buildings, it should be much greater than the figure thus obtained, probably double.

The estimation of years of use allowed by the income tax collectors is usually so liberal as to prevent injustices from the regulation, but it is unfortunate to have the incorrect principle taught. Sound business procedure requires a comprehension of the real depreciation. Many persons make the mistake of estimating depreciation too low and hence make unwise purchases.

REPORT OF THE COMMITTEE ON TEACHING OF THE AMERICAN FARM ECONOMIC ASSOCIATION.

As its work for the past year your committee on teaching has attempted to obtain information as to the present status of graduate work in agricultural economics, farm management, and marketing in the State colleges of agriculture of the United States. Information was obtained from 46 of the 48 State agricultural colleges.

Eight of these institutions offer graduate work in one or more of these lines of work for both a master's and a doctor's degree. These include California, Illinois, Massachusetts, Minnesota, Missouri, Wisconsin, Utah, and Cornell. The usual requirement for the doctor's degree at these institutions was six semesters, or three years, of graduate work after a bachelor's degree for men who do not hold positions as instructors. Of these three years at least one year must be spent in actual residence at the institution. Graduate students who hold appointments as instructors are usually required to spend one year additional. Up to the present time 26 men were reported as having completed major work for a doctor's degree in these subjects and 21 are now working for this degree.

In addition to the eight colleges offering work for both a master's and a doctor's degree, seventeen of the State colleges offer graduate work for a master's degree only. These include Colorado, Florida, Indiana, Iowa, Kansas, Kentucky, Maine, Nebraska, North Carolina, North Dakota, New Hampshire, Ohio, Tennessee, Texas, Virginia, Washington, West Virginia. One hundred and twenty-four men were reported as having completed major work for a master's degree in agricultural economic work at the 24 institutions offering it, while 62 men are now engaged in graduate work for this degree. The usual requirement is two semesters, or one year, of graduate work for graduate students who are not instructors, and three terms for those who are instructors. Twenty-one institutions do not offer graduate work in these subjects at the present time. These include Alabama, Arizona, Arkansas, Connecticut, Delaware, Georgia, Idaho, Louisiana, Maryland, Michigan, Mississippi, Montana, Nevada, New Mexico, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Vermont, Wyoming. In several of the reports from these colleges the hope was expressed that they would be able to offer graduate work in the near future.

According to the reports received less than fifty fellowships are available for graduate students in agricultural economic work in the 25 colleges offering graduate work. Many institutions have no graduate fellowships available. The number of fellowships reported as available is probably the number available for all graduate students in colleges of agriculture. Only a small proportion of these would therefore be available for graduate students in agricultural economics, farm management, and marketing. Many well-qualified young men are prevented from pursuing graduate work for financial reasons. Although limited, the financial assistance given by fellowships would enable many of these young men to fit themselves for work in these fields. Your committee believes that farmers' organizations and persons of means could render an important service to agriculture by increasing the number of graduate fellowships for students in economic work related to agriculture.

It is evident that the increasing demand for trained men in agricultural economic work has led to a rapid development in the facilities for graduate training in these fields. In view of the increasing importance of graduate work, your committee recommends:

1. That as complete as possible a list of the men who have already completed major work for an advanced degree in agricultural economics, farm management, or marketing be published in the JOURNAL with as complete information as possible in regard to each.

2. That a list of graduate students who are taking work be published annually hereafter in the July number of the JOURNAL.

Respectfully submitted:

W. D. NICHOLLS,
J. D. BLACK,
A. HOBSON,
H. M. ELIOT,
W. I. MYERS.

The following list of graduate students is taken from the reports received and is as complete and accurate as the reports permit. It is hoped that unavoidable omissions will be brought to the attention of the teaching committee in order that the correction may be made in the next list published.

MEN WHO HAVE COMPLETED OR ARE NOW TAKING WORK FOR THE DOCTOR'S DEGREE.

Anderson, H. E., M.A., Wisconsin, 1920. Agricultural Economics.

Thesis title, Marketing of Minnesota Butter in New York. Minors, General Economics, *Minnesota,* 1923.

Ault, Otto, B.A., Defiance College, 19—. Agricultural Economics. Thesis title, The Peanut as an Agricultural Crop, *Minnesota,* 1919.

Baker, Oliver E., M.S., Columbia University, 19—. Economics and Geography. Thesis title, Three Chapters in Land Utilization, *Wisconsin,* 1921.

Benton, Alva, M.S., Penn State, 19—. Agricultural Economics. Thesis title, Short-Time Farm Credit, *Wisconsin,* 1921.

Brossard, E. B., B.S., Utah. Thesis title, Some Types of Irrigation Farming in Utah. Minor, Farm Management, *Minnesota,* 1919.

Cavert, W. L., M.S., Minnesota, 19—. Agricultural Economics. Thesis subject not announced. Minor, Farm Management, 19—. *Minnesota.*

Chambers, C. R., M.A., Minnesota, 1916. Agricultural Economics. Thesis title, Land Valuation. Minor, General Economics, *Minnesota,* 1923.

Clayton, Claude F., M.A., Missouri, 1916. Agricultural Economics. Thesis title not chosen. Minor, Sociology, *Minnesota,* 1924.

Cox, Alonzo, M.A., University of Texas, 19—. Agricultural Economics and Economics. Thesis title, Social and Economic Analysis of the Milltown Agricultural Community, Polk County, Wisconsin, *Wisconsin,* 1920.

Dadisman, A. J., West Virginia, 19—. Major subject, Farm Management. Thesis title not announced. Minors, Political Science and Rural Organization, *Cornell,* 1922.

Erdman, Henry, B.S., South Dakota State College, 19—. Agricultural Economics. Thesis title, The Marketing of Whole Milk, *Wisconsin,* 1920.

Falconer, John, M.S., Wisconsin, 19—. Agricultural Economics. Thesis title, Agricultural Production in the United States from 1840 to 1860, *Wisconsin,* 1914.

Fox, D. S., B.S., 1913, Cornell. Farm Management. Thesis title, An Analysis of the Costs of Growing Potatoes. Minors, Farm Crops, Animal Husbandry, *Cornell,* 1918.

Gabriel, H. S., B.S., 1915, Cornell. Farm Management. Thesis title, Problems in Railroad Transportation Relating to Agriculture. Minors, Economics and Rural Education, *Cornell,* 1923.

Garey, L. F., M.S., Nebraska, 19—. Agricultural Economics. Thesis title not chosen. Minor, Farm Management, *Minnesota,* 19—.

Garnett, William E., M.A., Peabody's Teachers' College, 19—. Thesis title, Economic and Social Survey of Albemarle County, Virginia, *Wisconsin,* 1921.

Gillette, R. L., B.S., Cornell, 1917. Farm Management. Thesis title, Farm Labor. Minors, Soils, Economics, *Cornell,* 1922.

Hall, Henry B., B.S., Massachusetts Agricultural College, 1912. Thesis title, History of Agriculture in Massachusetts, *Harvard,* 1918.

Hart, V. B., B.S., Cornell, 1916. Farm Management. Thesis title, Economic Study of Farm Motor Trucks in New York State. Minors, Animal Husbandry and Economics, *Cornell,* 1922.

Hayes, Augustus, M.S., Wisconsin, 19—. Agricultural Economics. Thesis title, Rural Organization, *Wisconsin,* 1920.

Hendel, Julius, B.S., Cornell, 1921. Agricultural Economics. Thesis title not chosen. Minor, Agricultural Biochemistry, *Minnesota,* 1924.

Holmes, Clarence, B.A., Michigan, 19—. Agricultural Economics. Thesis title, Horses and Mules in American Agriculture, with Special Reference to their Function in Agricultural Production, *Wisconsin,* 1920.

Hopkins, J. A., B.S., Delaware College, 1917. Thesis title, Land Values in Iowa, *Harvard,* 19—.

Inomato, Tsunao, B.A., Waseda University, 19—. Agricultural Economics. Thesis title, An Analysis of some Typical Theories of Proper Intensity of Culture, *Wisconsin,* 1920.

Ise, John, A.B., University of Kansas, 1910. Thesis title, American Forest Policy, *Harvard,* 1914.

Klaragard, Sever, A.B., Saint Olaf, 1917. Economics. Thesis title, Some Economic Aspects of the Non-Partisan League Movement, *Illinois,* 1921.

Lundquist, G. A., M.A., Harvard, 19—. Agricultural Economics. Thesis title not announced. Minor, Sociology, *Minnesota,* 19—.

McCord, W. H., M.S., Iowa, 1920. Agricultural Economics. Thesis title, Livestock Marketing. Minor, General Economics, *Minnesota,* 1923.

Macklin, Theodore, B.S., Iowa State, 19—. Agricultural Economics. Thesis title, A History of the Organization of Creameries and Cheese Factories in the United States, *Wisconsin,* 1916.

Miller, Paul L., M.A., Michigan, 1915. Agricultural Economics. Thesis title, Principles of Coöperation. Minor, Economic History, *Minnesota,* 1923.

Misner, E. G., B.S., Cornell, 1913. Farm Management. Thesis title, An Economic Study of Dairying on 149 Farms in Broome County, New York. Minors, Animal Husbandry and Dairy, *Cornell,* 1918.

Myers, W. I., B.S., Cornell, 1914. Farm Management. Thesis title, An Economic Study of Farm Layout. Minors, Economics and Animal Husbandry, *Cornell,* 1918.

Newlove, G. H., Ph.B. and M.A., Hamline University and Minnesota, 1914 and 1915. Economics. Thesis title, Economic History of Illinois Agriculture, *Illinois,* 1918.

Noble, C. V., B.S., Cornell, 1916. Farm Management. Thesis title, The Cost of Living in Small Factory Towns. Minors, Economics and Marketing, *Cornell,* 1920.

Norton, L. J., B.S., Cornell, 1917. Farm Management. Thesis title, An Economic Study of the Production of Canning Crops in New York State. Minors, Economics and Marketing, *Cornell,* 1921.

Pearson, F. A., B.S., Cornell, 1912. Farm Management. Thesis title, Agricultural Prices. Minors, Economics and Marketing, *Cornell,* 1922.

Pond, G. A., Minnesota, 1921. Agricultural Economics. Thesis title not announced. Minor, Farm Management, *Minnesota,* 19—.

Rasmussen, M. P., B.S., Cornell, 1919. Farm Management. Thesis title, Farm Credit. Minors, Marketing and Economics, *Cornell,* 1924.

Spencer, L., B.S., Cornell, 1918. Farm Management. Thesis title, Farm Credit. Minors, Marketing and Economics, *Cornell,* 1923.

Stewart, C. L., A.B. and M.A., Illinois Wesleyan and Illinois, 1911 and 1912. Economics. Thesis title, Land Tenure in the United States with Special Reference to Illinois, *Illinois,* 1915.

Stine, Oscar C., Ph.B., Ohio, 1908. Agricultural Economics. Thesis title, An Economic History of Wheat Production in the United States, *Wisconsin,* 1921.

Thompson, A. L., B.S.A., Cornell, 1911. Farm Management. Thesis title, The Cost of Producing Milk on 174 Farms in Delaware County, New York. Minors, Cost Accounts and Farm Crops, *Cornell,* 1914.

Waite, Warren C., M.A., Minnesota, 1921. Agricultural Economics. Thesis title not announced. Minor, General Economics, *Minnesota,* 1921.

Wertz, V. R., M.A., Wisconsin, 1919. Agricultural Economics. Thesis title not announced. Minor, General Economics, *Minnesota,* 1924.

Witte, W. L., M.A., Minnesota, 1920. Agricultural Economics. Thesis title not announced. Minor, Sociology, *Minnesota,* 19—.

Working, Holbrook, M.A., Cornell, 19—. Thesis title, A Study of the Relation of Price to Production and Consumption of Wheat, *Wisconsin,* 1921.

Worsham, C. G., M.S., Minnesota, 1921. Agricultural Economics. Thesis title not announced. Minor, Farm Management, *Minnesota,* 19—.

Young, E. C., B.S., Grove City College, Pa., 1914. Farm Management. Thesis title, A Study of the Movement of Farm Population. Minors, Animal Husbandry and Economics, *Cornell,* 1921.

Youngblood, Bonney, M.S., Agricultural and Mechanical College of Texas, 19—. Thesis title, An Economic Study of Typical Ranching Area on the Edwards Plateau of Texas, *Wisconsin,* 1921.

MEN WHO HAVE COMPLETED OR ARE NOW TAKING GRADUATE WORK FOR THE MASTER'S DEGREE.

Allison, H. O., B.S., University of Illinois, 1906. Animal Husbandry. Thesis title, The Meat Packing Industry of the United States, *Illinois,* 1908.

Anderson, E. W., B.S., North Dakota, 1915. Agricultural Economics. Thesis title, Grain Marketing Program for Montana. Minor, General Economics, *University of Minnesota,* 1922.

Andrews, M. E., B.S., Oklahoma, 19—. Farm Management. Thesis title, Cost of Producing Milk in Cerro Gordo County, Iowa. Minor, Agricultural Economics, *Iowa State,* 1920.

Bjorka, K., B.S., Minnesota, 1915. Agricultural Economics. Thesis title, Economics of Minnesota Dairying. Minor, Farm Management, *Minnesota,* 1923.

Bonham, E. R., B.S., Purdue, 1921. Farm Management. Thesis title, Purchasing Power of Farm Products in Clinton Co., Indiana. Minors, Economics and Animal Husbandry, *Purdue,* 1923.

Brickman, Benj., B.S., Cornell, 1916. Animal Husbandry. Thesis title, Factors Affecting the Distribution of Dairy Cattle in the United States, Minor, Farm Management, *Cornell,* 1916.

Brierley, W. G., B.S., Washington, 1913. Thesis title, Modern Marketing and Storage Methods for Fruit and Vegetables, *Washington,* 19—.

Brossard, E. B., B.S., Utah, 1911. Farm Management. Thesis title, The Important Factors in the Operation of Irrigated Farms. Minor, Economics, *Minnesota,* 1917.

Brunson, E. B., B.S., Hobart, 1911. Farm Management. Thesis title, Cost Accounts on Four New York Farms. Minor, Pomology, *Cornell,* 1914.

Cady, E. L., B.S.A., Missouri, 1921. Agricultural Economics. Thesis title, Marketing. *Iowa,* 19—.

Case, H. C. M., B.S., Illinois, 1912. Animal Husbandry. Thesis title, An Analysis of the Factors Influencing the Cost of Pork Production. *Illinois,* 1919.

Cavert, W. L., B.S., Cornell, 1912. Farm Management. Thesis title, An Investigation of Farm Organization and Profits as Affected by Tenure in Northfield Township, Rice County, Minnesota. Minor, Economics, *Minnesota,* 1914.

Clapp, A. L., B.S., Kansas, 1914. Agricultural Economics (Minor), *Kansas,* 19—.

Clark, F. E., A.B., Albion College, 1912. Economics. Thesis title, Coöperative Grain Elevator Movement in Illinois, *Illinois,* 1913.

Corniea, F. A., B.S., Minnesota, 1911. Farm Management. Thesis title, The Organization of State Institutional Farms with a Plan for the Reorganization of the Farm in Connection with the School for Feeble-Minded at Faribault. Minor, Economics, *Minnesota,* 1914.

Craver, A. W., B.S., Illinois, 1921. Animal Husbandry. Thesis title, Livestock Markets and the Factors Affecting their Operation, *Illinois,* 1922.

Crickman, C. W., B.S., Illinois, 1921. Agricultural Economics. Thesis title, Marketing, *Iowa,* 19—.

Curtiss, R. E., B.S., Minnesota, 19—. Thesis title, Basis for Determining the Price of Market Milk with Special Reference to the Twin City Market. Minor, Farm Management, *Minnesota,* 1921.

Dadisman, A. J., B.S.A., West Virginia, 1914. Farm Management. Thesis title, Study of Labor in Crop Production in West Virginia. Minor, Rural Education, *Cornell,* 1914.

Daggit, E. M., B.S., Minnesota, 1921. Agricultural Economics. Thesis title, Market Distribution of Butter in Twin Cities. Minor, General Economics, *Minnesota,* 1922.

Daugherty, M. M., B.S., Texas, 1916. Farm Management. Thesis title, Relation of Farm Practice to Prices for Agricultural Products. Minor, Vocational Teaching, 19—.

Davis, Harold, B.S., Washington, 1908. Thesis title, Fruit Growers' Associations and their Methods of Marketing Crops, *Washington,* 19—.

Deal, T. M., B.S.A., Missouri, 1917. Agricultural Economics. Thesis title, History of Farmers' Elevator Movement, *Iowa,* 19—.

Doane, D. H., B.S.A., Missouri, 1908. Farm Management. Thesis title, Sheep Feeding and Farm Management, *Missouri,* 1909.

Dolanay, J. C., B.S., Philippines, 1917. Agricultural Economics. Thesis title, Membership Contracts. Minor, Agronomy, *Minnesota,* 1922.

Dwinelle, E. V. K., B.S., Hobart, 1910. Farm Management. Thesis title, Cost Accounts for 1 Year on a New York General Farm. Minor, Pomology, *Cornell,* 1914.

Eastman, M. G., B.S., New Hampshire, 1913. Farm Management. Thesis title, A Statistical Study of Farms in Cheshire and Sullivan Counties, New Hampshire. Minor, Animal Husbandry, *Cornell,* 1916.

Eliott, J. W., B.S.A., New Mexico, 1915. Farm and Ranch Economics. Thesis title, Tenantry under Plantation System. Minors, Farm Management and Economics and Money and Banking, *Texas,* 1921.

Elliott, F. E., B.S., Purdue, 1921. Farm Management. Thesis title, Some Aspects of Different Sources of Farm Power. Minors, Economics and Farm Mechanics, *Purdue,* 1923.

Engberg, R. C., B.S., Iowa, 19—. Farm Management. Thesis title not announced. Minor, Agricultural Economics, *Minnesota,* 1923.

Ferguson, Daniel, B.S., Ohio, 19—. Agricultural Economics. Thesis title, The Negro as a Farmer. Minor, Sociology, *Ohio,* 1921.

Filley, H. C., A.B., Nebraska, 1903. Farm Management. Thesis title, Agriculture in Nebraska High Schools. Minors, Agronomy and Animal Husbandry, *Nebraska,* 1911.

Foard, W. E., B.S.A., Missouri, 1913. Farm Management. Thesis title, The Farm Diary in Cost of Production Investigations, *Missouri,* 1914.

Frame, B. H., B.S.A., Missouri, 1921. Farm Management. Thesis title not announced. Minor, Rural Economics, *Missouri,* 19—.

Frear, D. W., B.S., Minnesota, 1909. Farm Management. Thesis title, A Syllabus of Farm Management. Minor, Agronomy, *Minnesota,* 1915.

Frerichs, Edward A., B.S., Nebraska, 1921. Rural Economics. Thesis title, Relation between Volume of Production and Price of Farm Products. Minor, Economics, *Nebraska,* 1922.

Friis, F. T., Copenhagen, 1919. Agricultural Economics. No thesis. Minor, General Economics, *Minnesota,* 19—.

Gagne, Chas., B.A., 1916; L.B., 1919, Laval St. Ann de la Pocatiere. Rural Economics. Thesis title, Coöperation in French Agriculture. Minor, Farm Management, *Cornell,* 1921.

Gardner, W. H., A.B., Nebraska Wesleyan, 1910. Farm Management. Thesis title, The Place of Agriculture in the Nebraska School System. Minors, Agronomy and Animal Husbandry, *Nebraska,* 1911.

Gaunity, E. W., B.S., Minnesota, 1921. Agricultural Economics. Thesis title, Coöperative Marketing of Livestock. Minor, General Economics, *Minnesota,* 1922.

Garey, L. F., B.S., Nebraska, 1913. Farm Management. Thesis title, Relation of Labor Income to Size and Type of Farm in Madison County, Nebraska. Minor, Dairy Husbandry, *Nebraska,* 1914.

Gibertson, H. W., B.S., Minnesota, 1910. Farm Management. Thesis title, The Marketing of Farm Products. Minor, Rural Economics, *Cornell,* 1911.

Gillilan, John. Thesis title, Land Settlement on Cut-Over Lands of Northern Minnesota. Minor, Farm Management, *Minnesota,* 1918.

Green, R. M., B.S.A., Missouri, 1914. Farm Management. Thesis title, Costs as a Basis for Determining Equitable Rent Rates on Farm Land, *Missouri,* 19—.

Haas, G. C., B.S., Minnesota, 1921. Agricultural Economics. Thesis title, Land Valuation Survey. Minor, General Economics, *Minnesota,* 1922.

Haig, Robert M., A.B., Ohio Wesleyan, 1908. Economics. Thesis title, The Taxation of Mortgages and Credit in Illinois and other States since 1870, *Illinois,* 1909.

Hammans, C. W., B.S., Iowa, 1914. Agricultural Economics. Thesis title, Local Markets for Livestock in Iowa County, *Iowa,* 19—.

Harter, Wm. L., A.B., McPherson College, 1904. Farm Management. Thesis title, Study of 5 Years' Business on 24 Selected Farms in Blackhawk, Tama and Grundy Counties, Iowa, *Iowa State,* 1918.

Henderson, J. B., B.S., Illinois, 1914. Animal Husbandry. Thesis title, Economic Production of Beef in the Cotton States, *Illinois,* 1916.

Hendricks, J. F., B.S., Nebraska, 1914. Farm Management. Thesis title, Factors Affecting Farm Profits in Phelps County, Nebraska. Minor, Horticulture, *Nebraska,* 1916.

Hodges, J. A., B.S.A., Kentucky, 1917. Farm Management. Thesis title, A Study of Farm Organization in the Burley Tobacco Region of Kentucky with Particular Reference to the Factor of Investment in Buildings and Machinery. Minors, Marketing and Agricultural Accounting, *Kentucky,* 19—.

Hofford, H. R., B.S., Purdue, 1921. Farm Management. Thesis title, Living Obtained from the Farm in Bartholomew County, Indiana. Minors, Economics and Animal Husbandry, *Purdue,* 1923.

Holt, B. A., B.S., Minnesota, 1920. Agricultural Economics. Thesis title, Organization and Management Problems of the Minnesota Potato Exchange. Minor, General Economics, *Minnesota,* 1922.

Horn, P. V., B.S., Maryland State, 1919. Marketing. Thesis title, Some of the Factors Influencing the Spreads in Prices between Retail Cuts of Meat. Minor, Farm Management, *Cornell,* 1921.

Jensen, J. P., B.A., 1913. Thesis title, Coöperative Marketing of Livestock in the United States with Special Reference to the Distribution of Returns and Costs. Minor, Sociology, *Minnesota,* 1917.

Johnson, Ernest R., B.S.A., Washington, 1920. Farm Management. Thesis title, The Cost of Producing Milk in Four Typical Dairy Sections in Western Washington, *Washington,* 1921.

Johnson, O. R., B.S.A., Missouri, 1910. Farm Management. Thesis title, Distribution of Farm Labor, *Missouri,* 1912.

Johnson, R. E., B.S., Purdue, 1921. Farm Management. Thesis title, Economic History of Land Values in Indiana. Minors, Economics and Education, *Purdue,* 1922.

Kano, Hisanori, A.B., Tokio Imperial University, 1916. Farm Management. Thesis title, Farm Tenantry in Nebraska. Minors, Agricultural Engineering and Animal Husbandry, *Nebraska,* 1918.

Kirk, Marvin S., B.S.A., North Dakota, 1916. Farm Management. Thesis title, Best Organization for Odessa Stock Farm, Devil's Lake, North Dakota. A Complete Study for 2-Year Period Accompanied with Interpretations and a System of Farm Records where there are 2 Operators and 3 Men Share Profits. Minors, Economic Science and Mathematics, *North Dakota,* 1923.

Lambert, C. L. No data given. *Utah.*

Lapp, Wm., B.S., Ohio, 19—. Agricultural Economics. Thesis title, Cold Storage for Eggs in Ohio. Minor, Poultry, *Ohio,* 1921.

Lathrop, F. W., B.A., Yale, 1911. Farm Management. Thesis title, A Study of Connecticut Counties Based upon the Census of 1910. Minor, Farm Management, *Cornell,* 1914.

Leager, M. C., B.S., Minnesota, 1908. Agricultural Economics. Thesis title, Cost Accounting for Terminal Elevators. Minor, Agricultural Education, *Minnesota,* 1922.

Leth, R. J., B.S., Idaho, 19—. Farm Management. Thesis title, Survey and Cost Accounting Methods of Studying Farm Enterprises, *Iowa State,* 1916.

Libbey, D. S., B.S.Com., Missouri, 1915. Marketing. Thesis title, A Survey of Coöperative Buying and Selling among Farmers in the State of Missouri with Intensive Study of such Organizations in Boone County, *Missouri,* 19—.

Loomis, Ralph, B.S.A., Missouri, 1913. Marketing. Thesis title, Development and Practices of Coöperative Livestock Shipping Associations in Missouri, *Missouri,* 1921.

Love, E. T., B.S., Washington, 1912. Thesis title, The Direct Exchange of Agricultural Products between the Farmers of the State of Washington, *Washington,* 19—.

Lybert, J. I. (working on a farm organization problem in Uintah County), *Utah.*

McBride, C. G., B.S., Penn State, 1911. Marketing. Thesis title, Marketing Potatoes and Cabbage in New York. Minor, Farm Management, *Cornell,* 1922.

McClure, Frank D., B.S., Kansas, 1911. Rural Economics. Thesis title, Relation between Price and Production of Corn and Hogs. Minor, Economics, *Nebraska,* 1922.

McConogha, W. V., B.S., Muskingum, 1917. Economics. Thesis title, The Relation of Free Land to the Labor Problem in the Period from 1830 to 1860, *Illinois,* 1922.

McCord, J. B. E., B.S., Penn State, 1918. Farm Management. Thesis title, Some Results of a Farm Management Survey of 37 Farms in Jefferson County, Pennsylvania. Minor, Animal Husbandry, *Cornell,* 1920.

McMillan, S. A., B.S., Texas, 1909. Farm Management. Thesis title, An Economic Study of Agriculture on the Lufkin Fine Sandy Loam in Brazos County, Texas. Minor, Soils, *Cornell,* 1917.

Malony, Clarence B., B.S., Michigan, 19—. Horticulture. Thesis title, Marketing Citrus Fruit. Minors, Horticulture and Bacteriology, *Florida,* 1918.

Martin, O. R., A.B., Central Wesleyan, 1907. Economics. Thesis title, Farm Accounts, Methods and Principles, *Illinois,* 1913.

Medlar, A. W., B.S., Doane College, 1906. Farm Management. Thesis title, A Farm Survey of Franklin Precinct, Fillmore County, Nebraska. Minor, Agronomy, *Nebraska,* 1915.

Melvin, J. C., B.S.A., Kentucky, 1918. Farm Management. Thesis title, A Study of Economic Farm Organization in Western Kentucky. Minors, Statistical Method and Agricultural Accounting, *Kentucky,* 19—.

Merchant, C. H., B.S., Cornell, 1920. Agricultural Economics. Thesis title, An Economic Study of the Municipal Markets, a Discussion of Wholesale and Retail Markets in the United States. Minor, Animal Husbandry, *Cornell,* 1922.

Metzger, Hutzel, B.S.A., North Dakota Agricultural College, 1920. Farm Management. Thesis title, Farm Organization in North Dakota. Minors, Marketing and Mathematics, *North Dakota,* 1923.

Mikami, Goro, B.C.S., Waseda University, 1912. Economics. Thesis title, Organization of Produce Exchanges in the United States, *Illinois,* 1917.

Miller, J. M., B.S.A., Missouri, 1915. Farm Management. Thesis title, Methods of Renting Land in Missouri with Some Common Forms of Lease, *University of Missouri,* 1916.

Miller, P. H., A.B., Hendrix College, 1914. Thesis title, Some Economic Aspects of Cotton Production in Arkansas, *Illinois,* 1918.

Mitchell, W. C., B.S.A., Kentucky, 1916. Rural Economics. Thesis title, Increase in Land Values in Missouri and Relative Increase in Farm Products. Minor, Farm Management, *Missouri,* 19—.

Morison, F. N., B.S., Ohio, 19—. Agricultural Economics. Thesis title, Land Values in Ohio. Minor, Economics, *Ohio,* 1921.

Mortinson, W. P., B.S.A., North Dakota, 1921. Farm Management. Thesis title, Farm Layouts for North Dakota. Minors, Economic Science and Economic Entomology, *North Dakota,* 1923.

Moyer, J. H., B.S., Kansas, 1921. Minor, Agricultural Economics, *Kansas,* 19—.

Musgrave, G. W., B.S., Cornell, 1915. Farm Management. Thesis title, A Study of Agriculture of 21 Counties in Pennsylvania. Minor, Soil Technology, *Cornell,* 1915.

Nelson, P., B.S., Utah, 1920. Farm Management. Thesis title not announced. *Utah,* 19—.

Overton, M. H., B.S., Purdue, 1916. Farm Management. Thesis title, Unit Factors in Beef Production. Minors, Economics and Animal Husbandry, Purdue, 1923.

Partridge, R., B.A., Brigham Young, 19—. Farm Management. Thesis title, Farm Fences. Minor, Mathematics, *Utah Agricultural College,* 19—.

Patterson, T. M., B.S., Mississippi, 1914. Rural Economics. Thesis title, Fundamental Principles of Coöperation. Minor, Rural Sociology, *Miss.,* 1915.

Peacock, W. M., B.S., Cornell, 1913. Farm Crops. Thesis title, Factors Influencing the Cost of Potato Production in Clinton and Franklin Counties, New York. Minor, Farm Management, *Cornell,* 1916.

Peck, F. W., B.S., Minnesota, 1912. Farm Management. Thesis title, Factors of Cost in Meat Production. Minor, Economics, *Minnesota,* 1917.

Peck, Millard, B.S., Iowa, 1917. Agricultural Economics. Thesis title not given. *Iowa,* 19—.

Peterson, G. A., B.S., Iowa State, 1918. Farm Management. Thesis title, Farm Leases and Land Tenure in the United States. Minor, Economics, *Cornell,* 1920.

Phillips, C. G., A.B., Nebraska State, 1912. Farm Management. Thesis title, An Agricultural Survey of Nebraska. Minor, Rural Economics, *Cornell,* 1916.

Pollock, J., B.S., Cornell, 1914. Agricultural Economics. Thesis subject not announced. *Utah,* 19—.

Pond, G. A., B.S., Minnesota, 1918. Farm Management. Thesis title, Variation in Cost of Production with Special Reference to Wheat Cost, *Minnesota,* 1921.

Price, H. B., B.A., Minnesota, 1914. Thesis title, Inspection and Grading of Grain. Minor, Sociology, *Minnesota,* 1916.

Quimby, J. C., B.S., Ohio State University, 1912. Animal Husbandry. Thesis title, Some Causes of the Fluctuation of Market Prices of Livestock, *Illinois,* 1917.

Reed, G. G., B.S., Purdue, 19—. Agricultural Economics. Thesis title, The Agricultural Resources of Russia. Minor, Animal Husbandry, *Iowa,* 1920.

Rhoades, E. L., B.S., Missouri, 1916. Minor, Agricultural Economics, *Kansas,* 19—.

Rhoads, H. R., B.A., 1917. Thesis title, Price Determination of South St. Paul Livestock Market. Minor, Animal Husbandry, *Minnesota,* 1920.

Robotka, F., B.A., 1915. Thesis title, A System of Accounting for Coöperative Produce Marketing Associations, *Minnesota,* 1921.

Roper, F. A., B.S., Cornell, 1915. Farm Management. Thesis title, Some Factors Influencing the Profitableness of Farming in Clinton and Orange Counties, New York. Minor, Animal Husbandry, *Cornell,* 1916.

Severson, A. S., B.S.A., North Dakota, 1918. Animal Husbandry. Thesis title, Livestock in North Dakota. Minor, Farm Management, *North Dakota,* 19—.

Shaffer, J. H., B.S.A., West Virginia, 1921. Farm Economics. Thesis title, Development of Agriculture in West Virginia. Minor, Economics, *W. Va.,* 19—.

Sheay, John, B.S., University of Illinois, 1912. Marketing. Thesis title, Farm Elevator Movement in Missouri. Minor, Coöperation, *Missouri,* 19—.

Sheppard, D. D., B.S.A., University of Missouri, 1915. Farm Management. Thesis title, Labor Distribution on Crops and Stock, *Missouri,* 1916.

Sherlaw, F. M., B.S., Illinois, 1921. Animal Husbandry. Thesis title, The Soy Bean in Agriculture and Commerce, *Illinois,* 1922.

Spafford, R. R., B.S., Nebraska, 1914. Farm Management. Thesis title, Farm Types in Nebraska as Determined by Climate, Soil, and Economic Factors. Minor, Agronomy, *Nebraska,* 1916.

Spencer, Edwin, B.A., Hiram, 19—. Agricultural Economics. Thesis title, The Columbus Vegetable Market. Minor, Economics, *Ohio State University,* 1921.

Stewart, C. L., A.B., Illinois Wesleyan, 1911. Economics. Thesis title, Studies in Farm Tenancy in Illinois, *Illinois,* 1912.

Stewart, R. L., B.S., New Mexico, 1911. Farm Management. Thesis title, A Study of the Labor Incomes of Typical Counties in Various Sections of the United States with Special Reference to Distance to Market and Rainfall. Minor, Poultry Husbandry, *Cornell,* 1914.

Stockdale, C. E., B.S.A., West Virginia, 1916. Farm Economics. Thesis title, Methods of Teaching Agriculture (Extension Viewpoint). Minors, Economics and Journalism, *W. Va.,* 19—.

Taylor, C. C., B.S., Colorado, 1917. Agricultural Economics. Thesis title, Land Values in 19 Iowa Counties, 1921, *Iowa,* 19—.

Thompson, S. H., B.S., Minnesota, 1914. Agricultural Economics. Thesis title, Marketing, *Iowa,* 19—.

Thomson, E. H., B.S., Cornell, 1909. Farm Management. Thesis title, An Agricultural Survey of Southern New Hampshire. Minor, Horticulture, *Cornell,* 1911.

Thorfinnson, T. S., B.S.A., North Dakota, 1921. Farm Management. Thesis title, Best Farm Organization for Home County; also Cost of Potato Production in Home County for Two Years. Minor, Mathematics, *North Dakota,* 1923.

Tilford, Geo., B.A., 1908. Thesis title, Study of Subject of Rural Credits with an Analysis in Detail of the Principles of Building and Loan Associations as a Possible Solution. Minor, Pol. Science, *Minnesota,* 1916.

Uplap, G. P., B.S., University of California, 1919. Chemistry-Economics. Thesis title, Development of the Sugar Industry in the United States, *Illinois,* 1921.

Vaughn, R. O., B.S.A., Mississippi, 1915. Farm Management. Thesis title, Cotton Production in the United States and the Relation of Price to Production. Minor, Animal Husbandry, *Cornell,* 1922.

Viken, Edward, B.S.A., North Dakota, 1921. Farm Management. Thesis title, Farm Administration and Farm Labor in North Dakota. Minors, Economic Science and Mathematics, *North Dakota,* 1922.

Wagner, R. F., B.S., Iowa, 1921. Agricultural Economics. Thesis title, Farm Organization, *Iowa,* 19—.

Waite, W. C., B.A., 1919. Thesis title, Cost Indices for Butterfat Production. Minor, Economics, *Minnesota,* 1921.

Wallace, B. A., B.A., 1917. Thesis title, Legal and Constitutional Aspects of State Aid and Control of Land Settlement with Special References to Minnesota. Minor, Farm Management, *Minnesota,* 1920.

Warber, G. P., B.A., Minnesota, 1913. Thesis title, Agricultural Credit in the United States. Minor, Sociology, *Minnesota,* 1914.

Watkins, A. K., B.S.A., Missouri, 1911. Farm Management. Thesis title, Farm Machinery in its Relation to Farm Labor, *Missouri,* 1912.

Watkins, L. H., B.S., Macalaster, 1914. Farm Management. Thesis title, Monthly Distribution of Horse and Man Labor. Minor, Horticulture, *Minnesota,* 1916.

Warwick, G. H., B.S., Iowa, 1919. Farm Management. Thesis title, Four Years' Cost Records on a Tenant Farm. Minor, Agricultural Economics, *Iowa,* 1920.

Watson, C. W., B.S., Nebraska, 1916. Farm Management. Thesis title, Some Factors of Success in Farming in York County, Nebraska. Minors, Animal Husbandry and Agronomy, *Nebraska,* 1917.

Weber, G. G., B.S., Penn State, 1917. Agricultural Economics. Thesis title, Marketing, *Iowa,* 19—.

Weeks, Chas., B.S., Nebraska, 1907. Agricultural Economics

(Minor). Thesis title, The Farm Bureau Movement, *Kansas,* 19—.

Weld, L. D. H., A.B., Bowdoin, 1905. Economics. Thesis title, Private Freight Car Systems and Special Equipment Cars, *Illinois,* 1907.

Whisenand, J. W., B.S., Nebraska, 1914. Animal Husbandry. Thesis title, Causes for Changes in the Number of Beef Cattle in the Corn Belt since 1890, *Illinois,* 1916.

Whitson, Jay, B.S., Iowa State, 19—. Farm Management. Thesis title, Economic Study of Farming in Union Township, Harrison County, Iowa. Minor, Animal Husbandry, *Iowa State,* 1918.

Wilcox, R. H., B.S., Minnesota, 1915. Animal Husbandry. Thesis title, Remunerative Prices for Beef Cattle Fattened in the Corn Belt, *Illinois,* 1919.

Woodworth, H. C., B.S., Illinois, 1909. Farm Management. Thesis title, A Study of Agricultural Production Centers of Minnesota. Minor, Rural Economy, *Cornell,* 1916.

Working, E. J., B.S.A., Arizona, 1921. Agricultural Economics. Thesis title, Cost Accounting, *Iowa,* 19—.

Worsham, C. G., B.S., Minnesota, 1919. Farm Management. Thesis title, A Study of Farm Organization in the Cut-Over Area of Northern Minnesota, *Minnesota,* 1921.

Youngman, W. H., B.S., Illinois, 1921. Agricultural Economics. Thesis title, History of Land Values in Iowa, *Iowa,* 19—.

Zimmerman, C. C., B.A., Missouri, 1920. Rural Sociology. Thesis title, Standards of Living on the Farm. Minors, Rural Economics and Farm Management, *North Carolina,* 1921.

NEW MEMBERS SINCE APRIL 1.

CALLAGHAN, F. R., Education Board, Shortland Auckland, New Zealand.

CAMP, WM. R., University of California, Berkeley, Calif.

CANCE, ALEXANDER E., Mass. Agricultural College, Amherst, Mass.

CAPPER, ARTHUR, 206 Senate Office Bldg., Washington, D. C.

CHAPEL, HOWARD N., Michigan Agricultural College, East Lansing, Mich.

CHURCH, VERNE H., 730 State Office Bldg., East Lansing, Mich.

CRIBBS, W. C., Michigan Agricultural College, East Lansing, Mich.

CULVER, GUY E., Michigan Agricultural College, East Lansing, Mich.

DAVIS, THOMAS J., Stephenville, Texas.

DUNCKEL, O. E., Michigan Agricultural College, East Lansing, Mich.

GRAY, CHESTER H., Nevada, Mo. R. F. D. No. 5.

HAMILTON, J. M., Bozeman, Montana.

JENSEN, W. O., Clemson College, South Carolina.

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LIVINGSTON, GEORGE, The American Inst. of Agriculture, 326 W. Madison St., Chicago, Ill.

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MEARS, ELIOT G., Stanford University, California.

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PARKER, MISS MAMIE C., Alexandria, Va.

POE, CLARENCE, Raleigh, North Carolina.

RAY, G. S., P. O. Box 146, Spokane, Washington.

RUDEGUIST, CARL A., Ashland, Wisconsin.

SATO, KANJI, Imperial University of Tokio, Komaba, Tokio, Japan.

TAYLOR, HENRY M., Box 1211, Richmond, Va.

TOWNE, E. T., University Station, Grand Forks, N. Dakota.

WESTBROOK, E. C., Georgia State College of Agriculture, Athens, Ga.

WILKES, CLAIR, 700 N. Third St., Corvallis, Oregon.

REVIEWS.

Marketing Agricultural Products. By BENJAMIN HORACE HIBBARD. (New York: D. Appleton and Company. 1921. Pp. xv, 389.)

Efficient Marketing for Agriculture. By THEODORE MACKLIN. (New York: The Macmillan Company. 1921. Pp. xviii, 418.)

The University of Wisconsin has long been noted for its work in agricultural economics and it is no surprise that two marketing books should come forth from its walls within a single year. These books, while the products of one department, are not alike. They are not competing books; but rather does it appear that the authors have attempted to make them complementary, or possibly present books which would fill the requirements of different institutions.

In examining closely the main theme which runs throughout these two books we note the same general attack of the market problem. It is from the economic standpoint that both men have made their presentations. Mere description of the market machinery is no longer accepted as an adequate presentation of the problem. The economic reasons for the practices which have grown up in the past are the essentials which must be considered and thoroughly understood. A concept of what marketing is and its place in the general field of economics is presented in both books. Both Dr. Hibbard and Dr. Macklin put up the market problem in a manner which makes the student realize that marketing is an economic study. This method of presentation is the proper one when we take into consideration what we know about markets today.

These books were written primarily for text use and one must consider them in this light. Macklin's book has many advantages as a text from the standpoint of the student. It is well bound, printed in clear type, easy to read, each paragraph properly headed in bold type, and gives a summary of the essential points at the end of each chapter. This summary is an advantage in most instances, although there is a tendency for some students, when rushed, to read only the summary and thereby miss a great deal which can not possibly be condensed.

Professor Macklin's chapter on Transporting Farm Products does not measure up to the standard which is desired. The economics of this market service are not dealt with fully enough. Too much space is devoted to giving statistics on costs. Costs are essential, but facts

concerning them do not bring forth principles. Costs may change from year to year and locality to locality. Principles are the same always. The first part of this book which presents the economic position of marketing and the explanation of the necessary services is a very able presentation of the subject, with the exceptions of the chapter on transportation, the omission of mention of risk as a market factor, and the failure to discuss organized exchanges and future trading. The latter part of the book is rather disjointed, although it presents some very valuable discussions. The chapter on Price Making is timely. In the future market students will, no doubt, give more attention to prices and price-making forces. One gets the impression that illustrations and quotations are utilized by the author to fill up space; however, maps, graphs, and pictures enliven the book, making it more readable, and are valuable, even though most of them will be out of date within a short time.

Efficient Marketing for Agriculture is a book which fills a long-felt need. It is a good text if properly used. Students like it and receive from it the proper economic attitude toward the market problem. Its use, however, is practically limited to courses dealing with the principles of marketing.

It is quite unfortunate that Dr. Hibbard's manuscript was not printed and made up in a more attractive form. The book is hard to read, even though the style is most attractive. From a mechanical standpoint it is deficient.

Marketing Agricultural Products is a book which does not have the right name. Less than one half of it deals with the principles of marketing as we have come to think of them. However, in these few pages we find much more sound economics than in many other full volumes. The treatment of farmers' movements and coöperation is excellent. No other book presents so clearly and concisely the important characteristics of so many of these general movements. The coöperative business organization section brings out the essentials of and requirements for successful coöperation as a business agency. It would probably have been a better arrangement if the student had been given the principles of coöperation before the study of the general movements. As a text for a combined course in marketing and coöperation this book is very good.

Both of these books are good and cover the field in a manner which no others have so far. It must be said that they are the best which are available for use as a basis for courses in agricultural marketing. Yet one does not feel satisfied with them. After reading them the

stamp of approval must be placed upon them, and at the same time there is an expression of regret that they do not go into the heart of the matter more thoroughly. Yet we should not expect too much from books. The development of a study like markets is one which takes time. A process of evolution must be undergone. The service or functional type of market presentation, which was introduced in published form first by Cherington and later followed up in a partial way by Duncan, has been carried a step farther in these two books. It is hoped that no other attempts will be made along this line unless it brings a decided improvement. The future should bring forth a fuller analysis of price-making forces, for there is the heart of marketing. There is a great opportunity for some one to present marketing from its economic standpoint in the fullest degree in relation to price.

JOHN T. HORNER.

MICHIGAN AGRICULTURAL COLLEGE.

Labor and Material Requirements of Field Crops. By L. A. MOOREHOUSE and O. A. JUVE, Office of Farm Management and Farm Economics. United States Department of Agriculture Bulletin No. 1000.

This publication presents in statistical and graphical form the distribution of labor on a large number of crops selected from cost account and survey data obtained in various regions of the United States. The distribution for the same crop is given by regions which allows contrast of labor costs for these different sections. This is the most complete presentation of labor costs yet published from any source and makes a distinct contribution to the economics of crop production. The presentation of the data is clear, concise, and well arranged. The graphs allow a visualization of the distribution. A presentation of this character is vital to the subject of Agricultural Economics.

FRANK APP.

NEW JERSEY AGRICULTURAL COLLEGE.

Farm Management. By R. L. ADAMS. (McGraw-Hill Book Company, New York, N. Y. 1921.)

This newest treatise on Farm Management is an important contribution to the literature of that subject. The book is divided into three parts. Part I includes the scope and place of farm management, selecting farming as a business, choosing a farm, organizing and equipping the business, capital requirements, farm profits, factors

affecting profits, financial forecasts of proposed farm plans, and farm management surveys. In Part II are included farm bookkeeping, cost accounting, cost of production, farm labor, tenancy, marketing, and farm law. Part III gives a brief consideration of the duties, qualifications, and outlook of the farm manager.

This book contains little that is new. It is largely a compilation of material from various bulletins on farm management and related subjects. A multiplicity of tables from these bulletins are presented often without adequate discussion and analysis. The chapter on "Factors Affecting Profits" is a case in point. Some original tables giving data on the relative profitableness of different crops and types of farming under California conditions are presented without giving enough information as to the number of farms or years included to enable the reader to judge as to the reliability of the data.

Naturally enough, the author's illustrations are largely drawn from California farming. However, many of these illustrations appear more academic than practical. Presumably to gain simplicity the author assumes a higher degree of specialization in many of these examples than is usually possible or desirable in actual farming. The problem of most young American farmers is not to plan an ideal system of farming and an ideal equipment for a given piece of land, but to reorganize an existing farm into a more profitable farm business. It would seem desirable, therefore, if the book had included some illustrations of this latter more typical problem.

Although unsuitable as a text in the opinion of the reviewer, this book will be found very useful as a reference because of the large amount of illustrative material brought together from various sources. It includes a very complete bibliography of farm management publications. The book is marred by a number of typographical errors and the discussion of principles leaves much to be desired.

W. I. MYERS.

CORNELL UNIVERSITY.

"Tenancy and Ownership in the Black Prairie of Texas," by J. T. Sanders, Division of Land Economics, Office of Farm Management and Farm Economics, is announced for early publication as Department Bulletin 1068.

Department Bulletin 1001, entitled "Relation of Land Tenure to the Use of Arid Grazing Land in the Southwest," by E. O. Wooton, shows the maladjustment between economic conditions and homestead legislation in the arid grazing regions and offers remedies.

A book on the subject of Simple Farm Accounts, by Rex E. Willard, farm economist at North Dakota Agricultural College, is just off the press. This book has been prepared to meet the demands of practical farmers and shows the simplest method of record keeping for the purpose of studying the farm business and also for the purpose of making income tax returns. The latter portion of the book shows the forms used and illustrative entries from an actual farm are presented.

A SELECTED LIST OF MARKETING BULLETINS.

THEODORE MACKLIN,

ASSOCIATE EDITOR, MADISON, WISCONSIN.

UNITED STATES DEPARTMENT OF AGRICULTURE, DEPARTMENT BULLETINS, MAY, 1919 TO DECEMBER, 1921.

No. of Bulletin.	Name of Bulletin.
788	Moisture in Wheat and Mill Products.
811	A System of Bookkeeping for Grain Elevators.
860	The Organization of Coöperative Grain Elevator Companies.
861	Marketing Eastern Grapes.
873	The Shrinkage of Market Hay.
935	The Distribution of Northwestern Boxed Apples.
937	Coöperative Grain Marketing.
977	Marketing Hay at Country Points.
978	The Weighing of Market Hay.
979	Marketing Hay Through Terminal Markets.
980	Inspection and Grading of Hay.
985	A System of Accounting for Cotton Ginneries.
999	Prices of Farm Products in the United States.
1002	Open Types of Public Markets.

STATE BULLETINS ON MARKETING.

If there have been issued other bulletins on marketing than those named below, they should be brought to the attention of the Associate Editor in charge of this section.

Arizona Exp. Sta. Bul. 85—A Study of Marketing Conditions in the Salt River Valley.
California Exp. Sta. Cir. 175—Progress Report on the Production and Distribution of Milk.
Connecticut Extension Bul. 18—The New Haven Market.
Connecticut Extension Bul. 34—Market Grades and Terms.
Illinois Exp. Sta. Cir. 238—Is Coöperative Marketing of Horticultural Products Applicable to Illinois Conditions?
Illinois Exp. Sta. Cir. 244—Coöperative Marketing of Horticultural Products.
Iowa Exp. Sta. Bul. 200—Coöperative Livestock Shipping in Iowa in 1920.
Iowa Extension Bul. 85—Organizing and Operating Coöperative Livestock Shipping Associations.
Kansas Exp. Sta. Bul. 216—Marketing Kansas Butter.
Kansas Exp. Sta. Bul. 224—Coöperation Applied to Marketing by Kansas Farmers.
Kentucky Extension Cir. 79—A Suggested Plan for Marketing Kentucky Wool.
Kentucky Extension Cir. 104—Coöperative Livestock Shipping Associations.
Massachusetts Extension Bul. 10—Advertising the Apple.
Massachusetts Extension Bul. 21—The Community Market.
Massachusetts Exp. Sta. Bul. 173—The Cost of Distributing Milk in Six Cities and Towns.
Minnesota Exp. Sta. Bul. 152—Farmers' Elevators in Minnesota.
Minnesota Exp. Sta. Bul. 156—Coöperative Livestock Shipping Associations in Minnesota.
Minnesota Exp. Sta. Bul. 167—Coöperative Buying by Farmers' Clubs in Minnesota.
Minnesota Exp. Sta. Bul. 166—Coöperative Creameries and Cheese Factories in Minnesota, 1914.
Minnesota Exp. Sta. Bul. 171—Coöperative Stores in Minnesota.
Minnesota Exp. Sta. Bul. 195—Local Coöperative Potato Marketing in Minnesota.
Mississippi Extension Bul. 15—Coöperative Marketing in Mississippi Through County Agents.
Mississippi Extension Cir. 32—Harvesting, Grading, Storing, and Marketing Sweet Potatoes.
Nebraska Exp. Sta. Cir. 5—From Car Door to Consumer.
Nebraska Exp. Sta. Cir. 9—Marketing Nebraska Potatoes.

Nebraska Extension Bul. 31—Coöperation.
Nebraska Extension Bul. 38—The Marketing of Mixed Grains.
Nebraska Extension Bul. 64—Coöperative Elevators.
New York Memoir 28—Coöperative Marketing in the Chautauqua-Erie Grape Industry.
Ohio Exp. Sta. Bull. 331—Farmers Elevator Movement in Ohio.
Ohio Exp. Sta. Bul. 342—Organization Among Ohio Farmers.
Oregon Exp. Sta. Bul. 168—Survey of Typical Oregon Farmers Creameries.
Pennsylvania Extension Cir. 50—Harvesting, Packing, and Marketing an Apple Crop.
South Carolina Ext. Bul. 46—Marketing Cotton in South Carolina.
Washington—Office of Farm Markets Bulletin 1—The Public Markets in the State of Washington.
Wisconsin Exp. Sta. Bul. 231—The Marketing of Wisconsin Cheese.
Wisconsin Exp. Sta. Bul. 238—Agricultural Coöperation.
Wisconsin Exp. Sta. Bul. 251—Markets and Prices of Wisconsin Cheese.
Wisconsin Exp. Sta. Bul. 256—The Marketing of Wisconsin Potatoes.
Wisconsin Exp. Sta. Bul. 270—The Marketing of Wisconsin Butter.
Wisconsin Exp. Sta. Bul. 282—Coöperation in Wisconsin.
Wisconsin Exp. Sta. Bul. 285—Marketing Wisconsin Milk.
Wisconsin Exp. Sta. Bul. 314—Wisconsin Livestock Shipping Associations.
Wisconsin Exp. Sta. Bul. 322—Marketing by Federations.
Wisconsin Exp. Sta. Bul. 324—What the Retailer Does with the Consumer's Dollar.
Wisconsin Exp. Sta. Bul. 327—Cost of Canning Wisconsin Peas.
Wisconsin Exp. Sta. Cir. 136—The Road to Better Marketing.
Wisconsin Exp. Sta. Special Cir.—Market Wisconsin Farm Products by Federation.

STATE PROGRAMS.

NEBRASKA.

In the University of Nebraska, College of Agriculture, H. C. Filley handles the instructional work in marketing, J. O. Rankin that in rural sociology, rural economics and farm law, and A. W. Medlar that in farm organization and farm accounts.

During the summer of 1922 Professor Medlar gave for the first time a special course in agriculture intended primarily for home economics students in addition to the course in elementary agriculture for public-school teachers which he has given in former summers. He has selected materials for a laboratory manual to accompany lectures in farm organization. Professor Medlar teaches the work in farm organization and farm accounts in the secondary school of agriculture; Mr. F. D. McClure teaches that in rural economics and marketing.

E. L. Taylor, Farm Management Demonstrator, laid especial stress during the past winter on all-day farm account schools in which farm organization problems were worked out in connection with farm accounts. At these meetings some time was devoted in the morning to the history of price movement and to export tendencies with special reference to corn and wheat. As there was interest in enterprise cost accounts, part of each morning was usually devoted to working out cost-of-production estimates on corn or wheat. Farm lease schools have been held in a number of counties.

G. R. Boomer, Specialist in Market Organization, has centered his activities mainly upon five projects: (1) furnishing market information, (2) furnishing information upon the most successful plan for the organization of coöperative grain elevators, (3) live-stock shipping associations, (4) coöperative creameries, and (5) coöperative egg circles. During a recent seven months' period Mr. Boomer addressed audiences aggregating 26,000 people. Organization work was not done, but information was given to those interested in organizing.

Professor Filley addressed nearly 50 high schools during the spring months, presenting the advantages of an agricultural education and the work offered at the Nebraska College of Agriculture. He received the hearty coöperation of city superintendents and high-school principals.

A short course for elevator managers held at the College of Agriculture, June 12–23, consisted of daily laboratory work in accounting from 8 to 10 followed by grain grading laboratory work from 10 to 12 in the morning. In the afternoon a lecture on grain marketing was followed by laboratory work in accounting.

J. O. Rankin is completing the analysis of the results of a socio-economic survey conducted in coöperation with the Office of Farm Management and Farm Economics covering nearly 1,050 Nebraska farms. With these are included data from about 100 farms surveyed in coöperation with the Interchurch World Movement and some data secured under other auspices. One manuscript based on this work has gone to press. One other has been submitted for criticism preparatory to its final revision, three others are nearly completed, and one is yet to be written. Professor Rankin is also coöperating with the Office of Farm Management and Farm Economics in a land price study.

Edward A. Frerichs, an assistant and graduate student, has recently completed a thesis upon "The Purchasing Power of Nebraska Grain and Some Relations Between Price and Production." He secured representative country elevator prices for corn, wheat, and oats from 1877 to 1921, and by the use of index numbers worked out tables and graphs showing the relative purchasing power of each of these products for forty-three years. For other commodities the index numbers prepared by the U. S. Bureau of Labor were used. He also worked out various relations between production and the price of farm products. His work is not yet available for distribution.

Cost-of-production records are being kept by several hundred Nebraska farmers on wheat, corn, and oats in coöperation with the Department of Rural Economics.

Texas.

Agricultural economics at the A. and M. College of Texas is in three divisions corresponding to the three major divisions of the college: research, instruction, and extension. The Division of Farm and Ranch Economics in the Experiment Station is held responsible for all agricultural economic research. All regular project research in any phase of agricultural economics is done by the Division of Farm and Ranch Economics, or in coöperation with it. The Chief of the Division, Dr. A. B. Cox, devotes his entire time to research. The Director of the Experiment Station, Dr. B. Youngblood, devotes his time available for study to research in this field. The two are assisted by graduate students and others in taking research projects.

Projects nearing completion are: (1) A Comprehensive Study of Ranch Economics, which deals with a discussion of the respective domains of the farmers and ranchmen, land problems in a ranch country, the proper size of ranches, land tenure in a ranch country, carrying capacity of the ranges, permanent improvements in a ranch country, operating capital, ranch credits, ranch products, marketing of ranch products, the ranch community, and social life in a ranch country; (2) Ranch Accounts; (3) Farmers' Economic Organizations in Texas, and (4) Land Prices and the Rent of Land.

Studies now planned are: (1) Economics of Crop Farming; (2) Economics of Stock Farming, and (3) An Intensive Study of Cotton Marketing.

The Office of Farm Management and Farm Economics of the United States Department of Agriculture has coöperated with the Texas Experiment Station during the past two years and plans to further extend that coöperation in making the studies now being planned. Moreover, the professors in the teaching division of the college often have projects in the division.

The teaching division of the college has developed a comprehensive course in economics, and especially in agricultural economics. The Department of Economics in the agricultural course is under the direction of Dr. F. B. Clark. He devotes almost all his time to the giving of courses in various phases of economic theory.

The new course in Agricultural Administration, of which Professor F. A. Buechel is head, is designed to fit men for careers in fields concerned primarily with economic and social questions. The course is divided into three departments: (1) Department of Agricultural Economics, of which Professor Buechel is head; (2) Department of Farm Management, of which Professor P. K. Whelpton is head, and (3) Department of Rural Sociology, of which Professor W. E. Garnett is head. Each of these men has been granted an assistant professor for the coming year. Over one hundred and fifty students have signified their intention of majoring in this course. The courses offered by the different departments are as follows: (1) Department of Agricultural Economics: (*a*) Principles of Accounting; (*b*) Agricultural Resources; (*c*) Agricultural Economics; (*d*) Cost Accounting; (*e*) Theory and Practice of Accounting; (*f*) Statistical Methods; (*g*) Marketing; (*h*) Property and Contract; (*i*) Economic Statistics; (*j*) Auditing; (*k*) Advanced Marketing Problems; (*l*) Ranch Economics; (*m*) Land Economics; (*n*) Land Problems and Land Policies; (*o*) Historical Development of Agricultural Eco-

nomics; (*p*) Agricultural Finance; (*q*) Transportation; (*r*) Public Finance. (2) Department of Rural Sociology: (*a*) Social Origins and Social Evolutions; (*b*) General Sociology; (*c*) Social Psychology; (*d*) Rural Sociology; (*e*) Group Relationships; (*f*) Social Pathology; (*g*) Rural Organizations; (*h*) The Family; (*i*) Community Development and Community Planning; (*j*) Agricultural Journalism; (*k*) Rural Research Methods; (*l*) Country Life Tendencies. (3) Department of Farm Management: (*a*) Farm Management; (*b*) Farm Accounting; (*c*) Advanced Farm Management.

The agricultural economic work of the Extension Division is carried on very largely by Mr. M. M. Daugherty, specialist in Farm Management, and Mr. R. R. Lancaster, specialist in farmers' organization work. Mr. Daugherty is specially concerned with the introduction of better business methods on the farms and devotes a large part of his time to conducting accounting schools and helping representative men to keep accounts on their business. Mr. Lancaster, as has already been suggested, assists in the organization of farmers' business concerns.

NEWS NOTES.

In Vermont farm business analysis records were taken of 154 farms in the town of Randolph, Orange County, and 95 farms in the town of Royalton, Windsor County. Both these towns are dairy sections where the main source of income is either milk or cream sold and the principal farm expense purchased feed. These records will be taken for a period of five years and the material used for investigation in farm organization and extension in farm management, through encouragement in keeping accounts and demonstrations of factors that influence farm profits.

The Federal office of Farm Management and Farm Economics is coöperating in the work and furnished Messrs. Funk and McKinley, who assisted in taking the records and planning the tabulations.

Two clubs have been organized among the boys and girls of Plainfield and Vergennes in Washington and Addison counties, Vermont.

The boys or girls keep the farm accounts for the parents and are paid by the father according to the grade of the book as determined by the Farm Management Demonstrator ($12, $10, or $8).

We have very high hopes for this kind of work. According to the principle that "It's hard to teach old dogs new tricks," it should be easier to instil an interest in the subject of farm accounts into the boys and girls than the fathers.

Dr. F. A. Pearson, formerly of the department of agricultural economics and farm management of Cornell University, accepted a position July 1 in the Bureau of Agricultural Economics, Washington, D. C.

Professor G. P. Scoville, who has been spending his sabbatical leave at Harvard in graduate study, returned to Cornell University July 1 to resume his duties with the department of agricultural economics and farm management.

Dr. E. G. Misher, of the department of farm management at Cornell University, and Mr. W. C. Funk, of the Bureau of Agricultural Economics, U. S. D. A., began the field work on a coöperative study of the economics of dairy farming in New York State. Data will be obtained on the cost of milk production and on the profitableness of the farm as a whole.

Mr. H. E. Babcock, professor of marketing of the department of agricultural economics and farm management, Cornell, has accepted a position as manager of the Coöperative Grange League, Federation Exchange.

A study of coöperative stores in New York State has been begun by Mr. R. G. Knapp, of the department of agricultural economics and farm management at Cornell University. This investigation will be carried on in coöperation with the Bureau of Agricultural Economics. Mr. Knapp expects to make a detailed study of the operation of coöperative stores in New York over several years.

Mr. M. J. Armes, of the Pennsylvania State Agricultural College, has been appointed assistant in farm management extension to assist Mr. E. L. Moffitt.

The more important lines of farm management work in Georgia during recent months consists of a survey of the cost of growing sweet potatoes and the collection of data on labor requirements of melons, sugar cane, wheat, oats, and cow peas.

An important movement has been undertaken by various business interests in Georgia and other Southern States for the purpose of teaching cotton growers how to use calcium arsenate in boll-weevil control. A large number of trained men have been employed to devote their entire time during the summer months to demonstrate the methods of applying the poison and to urge all farmers to use it. This work promises to be a big factor in the economic production of cotton.

The work in farm mechanics at the West Virginia Agricultural College has been placed in the department of farm economics. Two new courses, economic land problems and a laboratory course in farm management, have been added to the work in the department.

The Department of Rural Economics of Ohio State University is taking as one of its major projects in farm marketing the development and introduction of adequate accounting systems for coöperative associations. An Accounting System for Cream Stations has been prepared, the coöperation of the central sales organization has been secured, bulletin and other explanation material is in preparation, and one-day schools for station managers are being held. Live-stock, elevator, and fruit associations are also receiving attention.

From July 10 to 21 a Summer School for Town and Country Pastors was held at the Ohio State University under the joint auspices of the College of Agriculture and the Ohio Federation of Churches.

Mr. F. E. Elliott, graduate student farm power studies, Purdue University, has accepted a position with the farm management department of that institution.

Mr. R. E. Johnson, who recently received his M.S. degree in agriculture from Purdue University, has been elected full-time instructor in the farm management department. His thesis was entitled "Prices of Farm Lands in Clinton and Tipton Counties, Indiana."

Mr. M. H. Watson, of the department of farm organization and management of the University of Illinois, who for the past year has been field assistant on the Champaign County cost route, is leaving the work on August 1, probably to take up farming.

Mr. Henry Keller, Jr., of the University of Wisconsin, assumed duties July 1 as assistant professor of agricultural economics, University of New Jersey.

Mr. L. P. Gabbard, who has been specialist in marketing for the past two years at the University of Wisconsin, has accepted a position at the Texas A. & M. College, effective July 1.

Mr. W. E. Paulson, specialist in marketing, University of Wisconsin, has been employed by the Experiment Station of that institution to commence a thorough study of the Door County Fruit Growers' Organization.

During June two farm management tours were held in Minnesota in connection with the two cost-of-production routes. At the farms visited charts were exhibited and data given showing the detailed records of two or three enterprises in which that farm had excelled. Following this the farmer was kept busy answering questions about his methods of handling the particular crop or live-stock enterprises under consideration.

The extension division of the University of Minnesota has recently published two bulletins dealing with farm management: bulletin number 59, "Planning the Farm Business," by William L. Cavert, and bulletin number 62, "Cost of Pork Production," by William L. Cavert and G. A. Pond.

Mr. R. C. Engberg, formerly with the Extension Service in Iowa and who for the past year has been taking graduate work at Minnesota, will assist in the cost of production studies during this coming year at the latter institution.

Mr. C. E. Wise, Jr., of the Minnesota Agricultural College, will assist in the cost-of-production studies during this summer season and during the winter months will assist William L. Cavert in the farm management extension work.

Mr. A. T. Hoverstad, a graduate of the Minnesota Agricultural College, has been added to the farm management staff to give full time to investigational work.

Mr. Elwin L. Cady, formerly connected with the Iowa Experiment Station, has been appointed specialist in marketing, Iowa State College.

Mr. William H. Stacy, for several years assistant county agent leader in Iowa, was appointed rural organization specialist in the Extension Service of that college, effective July 1. Mr. Stacy received his master's degree this past year at Cornell.

Mr. A. L. Walker, of the agricultural economics section of the Iowa Extension Service, will take graduate work at the University of Wisconsin during this next year.

A book entitled "Simple Farm Accounts" has been published by Rex E. Willard, of the North Dakota State College of Agriculture. This book is adapted to the use of farmers and also is being used as a textbook in school work. The subject of farm accounts has been officially introduced into the course of study for more than 500 consolidated schools of the State and next year will occupy the position of one half year course. The subject will also be taught in some of the common schools in connection with agriculture and arithmetic.

Field work on the first year's study of the feeder cattle, sheep, and wool business has been started by the division of agricultural economics of the South Dakota Agricultural College. Courses in farm organization, coöperative management, and rural sociology will be added this coming year by this department.

The teaching of farm accounts has been included in the new State course of study for common schools in South Dakota. One fifth of the eighth-grade work consists of practical work in farm accounts.

Pupils are to use the State college farm account book, turning it in at final examination for credit not to exceed 20 per cent. The course consists of the entry in farm account books of items in a special college bulletin furnished free to the teacher.

Investigational work in farm management in Arkansas during the past year has been principally that of obtaining the basic labor data on various farm crops. The seasonal distribution of this labor as well as the total labor requirements are given attention.

Professor R. T. Burdick, of the department of economics and sociology, Colorado Agricultural College, received the degree of master of science from that institution in June. His thesis was entitled "A Study of Colorado Dry Farms to Find the Underlying Causes of Profit and Loss."

The Bureau of Agricultural Economics, the Washington State College of Agriculture, and the University of Idaho are coöperating in a cost of production and farm organization study in the Palouse area. The Bureau of Agricultural Economics, the Office of Sugar Plant Investigations of the Bureau of Plant Industry, and the University of Idaho are coöperating in a cost of production and farm organization study in the Twin Falls district of Idaho. This is the third year on these studies.

Mr. A. E. deFremery, a graduate of the California College of Agriculture, has been appointed to a position with the farm management department of that college, effective July 1.

A State-wide study of the cost of production of whole milk and butterfat by the California State College of Agriculture is reported to be well under way. Three hundred and sixty dairies are involved in the study, and full time of four men and part time of twenty-five collaborators is required for the gathering of the data and getting it into shape for use.

The Commonwealth Club of California has made available $1,000 for a coöperative study with the University of California regarding tenancy conditions. Three graduate students have been placed in the field for the collection of field data.

The District of Columbia local of the American Farm Economic Association has held two meetings since its organization on March 9. Senator Irvine L. Lenroot of Wisconsin, and Senator Peter Norbeck

of South Dakota, met with the members of the chapter on May 11 and discussed middle term credit. On June 15, Representative Sydney Anderson, Chairman of the Joint Congressional Commission of Agricultural Inquiry, and Mr. Julius H. Parmelee, Director of the Bureau of Railway Economics, discussed "The Farmer and the Railways." At the first meeting Dr. C. L. Stewart, president of the local chapter, presided. At the June get-together Dr. H. C. Taylor introduced the speakers and acted as presiding officer. The next meeting of the local will be held in the autumn.

A limited number of copies of the addresses on "The Farmer and the Railways," by Hon. Sydney Anderson, Chairman, Joint Commission of Agricultural Inquiry, and Dr. Julius H. Parmelee, Director of the Bureau of Railway Economics, are available. Members desiring copies may obtain same while the supply lasts by addressing the Secretary-Treasurer of the District Chapter—Mr. Charles D. Bohannan, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C. Copies are also available of addresses on "Middle Term Credits," by Senators Lenroot of Wisconsin and Norbeck of South Dakota.

Standardization studies in progress in the Bureau of Agricultural Economics include such commodities as wool, live stock and dressed meats, tobacco, fruits and vegetables, dairy products and hay. Containers for fruits and vegetables, federally standardized in part, are ready for further legislation, and studies beyond the recommended standards are under way. The Bureau is slowly formulating the principles that should underlie all agricultural standardization work and is developing toward uniformity in federal standardization. Cotton, wheat, shelled corn, and oats are already standardized by laws enforced by the Bureau.

The Bureau of Agricultural Economics is conducting a series of test shipments of fruit through the Panama Canal under varying planned conditions of temperature, ventilation, and other factors. Investigators accompany the trips and make constant records of conditions which are correlated with the condition of the fruit on arrival. Tentative results of these trips are given to the coöperating state departments, shippers, and shippers' organizations.

A study of the costs and methods of marketing potatoes is being made by the Bureau of Agricultural Economics in coöperation with State institutions in New York, Michigan, Wisconsin, and Minnesota.

Dr. C. E. Ladd, of Cornell University; Mr. Paul L. Miller, of the University of Minnesota; Mr. J. T. Horner, of the Michigan Agricultural College, and Mr. Nelson C. Hall, of the State Bureau of Markets of Wisconsin, have been jointly employed to conduct the study in their respective States.

Dr. H. E. Erdman, who for ten months directed the cost of marketing work of the Bureau of Markets and Crop Estimates, resigned June 30 to accept the position of Professor of Marketing in the Division of Rural Institutions of the University of California. A. V. Swarthout has been placed in charge of the Cost of Marketing Division of the new Bureau of Agricultural Economics.

Center Market, the largest market in Washington, D. C., and one of the largest retail markets in the country, came under Federal ownership and control April 1, 1922, and is now being operated under the direction of the Bureau of Agricultural Economics. In connection with the operation of the market, the Bureau is operating a cold-storage plant of approximately 500,000 cubic feet of cold-storage space. The market covers approximately two city blocks, with 664 inside stalls, 34 spaces under awnings, 100 against side walls, and 200 wagon spaces for farmers.

This market under Federal administration will afford unusual opportunities for intensive studies of wholesale and retail city marketing, prices, farmer preferences, consumer preferences, and the many problems of city market regulation and control.

Problems of correlating State and Federal activities, and work between States, in the marketing of farm products, were considered at a conference of the Executive Committee of the National Association of the State Marketing Officials and the Bureau of Markets and Crop Estimates, May 9 and 10. The meetings were held in the office of Dr. H. C. Taylor, Chief of the Federal Bureau, and were attended by representatives from 12 States. In some cases several men were sent by one State representing different phases of marketing.

To secure the greatest possible use of its exhibit material, originally prepared for State fairs and similar uses, the Federal Department of Agriculture this year tried the experiment of offering the exhibits relating to the marketing of farm products to the agricultural colleges within reasonable distance from headquarters. The northeast and the southeast sections of the United States were selected for the

experiment. Thirteen colleges received the exhibits. An expert from the Department of Agriculture was always in attendance and was available for lectures and demonstrations. The plan included the widest possible use of the exhibits while at the colleges, and many of the institutions used them for community as well as college purposes.

Mr. A. W. McKay, Specialist in Market Extension, Bureau of Markets and Crop Estimates, is making a special study of coöperation in New England. Among the associations studied by him are the Vermont Maple Producers' Coöperative Exchange, Inc., the New England Milk Producers' Association, the Eastern States Farmers' Exchange, the New Hampshire Coöperative Marketing Association, and the New England Cranberry Sales Company. Mr. McKay will meet with the managers of these and other associations and obtain from them first-hand information regarding the management of their enterprises, and will secure data relative to the factors which go to make up a successful marketing organization.

Crop and market news compiled by the Bureau of Agricultural Economics is now being broadcast by radiophone from 41 stations in the United States.

Mr. Charles J. Brand, first chief and organizer of the Bureau of Markets, was appointed Consulting Specialist in Marketing in the Department of Agriculture, effective July 1. In his new position Mr. Brand will direct the investigations and studies of the packing industry for the Packers and Stockyards Administration. At the same time he will be available for consultation regarding problems relative to the distribution and marketing of all farm products. Mr. Brand performed excellent work in the field of specialized marketing and Secretary Wallace and a number of bureau chiefs have expressed the feeling that the department is unusually fortunate in obtaining his services.

A Know-Your-Own-Wheat campaign in the spring wheat States is being sponsored by the Bureau of Agricultural Economics in coöperation with the States Relations Service and the Grain Future Trading Administration of the Department of Agriculture. Instruction in the grading of wheat in accordance with the official standards of the United States will be given to county agents, grain buyers, elevator men, and others in the Dakotas and Minnesota, who in turn will instruct the farmers in proper grading.

In connection with the campaign, a grain market news service is to be conducted from Minneapolis. This service will include market news on wheat, giving prices at which grades and groups within grades actually sold. It is the aim of the service to reflect back to the farmer the true milling value of wheat.

A nation-wide live-stock reporting service is being organized by the Bureau of Agricultural Economics. It is an effort to stabilize the live-stock and meat industry by permitting closer correlation of supply and demand. Full details of the entire plan were worked out at Denver, Colo., July 17, at a conference of State and Federal officials and representatives of the entire live-stock and meat industry.

Twenty-nine States are coöperating with the Bureau of Agricultural Economics in estimating crops and live stock. These States include most of those from New England to North Carolina, most of the States in the corn and wheat belts, seven Southern States, four Mountain States, and California.

The American Economic Association will meet at Chicago during the holiday season and the Farm Economic Association will probably meet with it.

REVIEW OF THE 1921–22 BRITISH APPLE MARKET.

A complete report on the British apple market for the 1921–22 season covering the outstanding features of the year, difficulties encountered in that market, methods of handling American fruit, and a detailed description of the British auctions may be had upon request to the Foreign Section of the Division of Statistical and Historical Research, Bureau of Agricultural Economics.